Defense Acquisition University

# Defense Acquisition System

**Richard Hanse**
**Defense Systems Management Colleg**
**School of Program Manage**
**richard.hansen@dau.m**
**(703) 805-343**

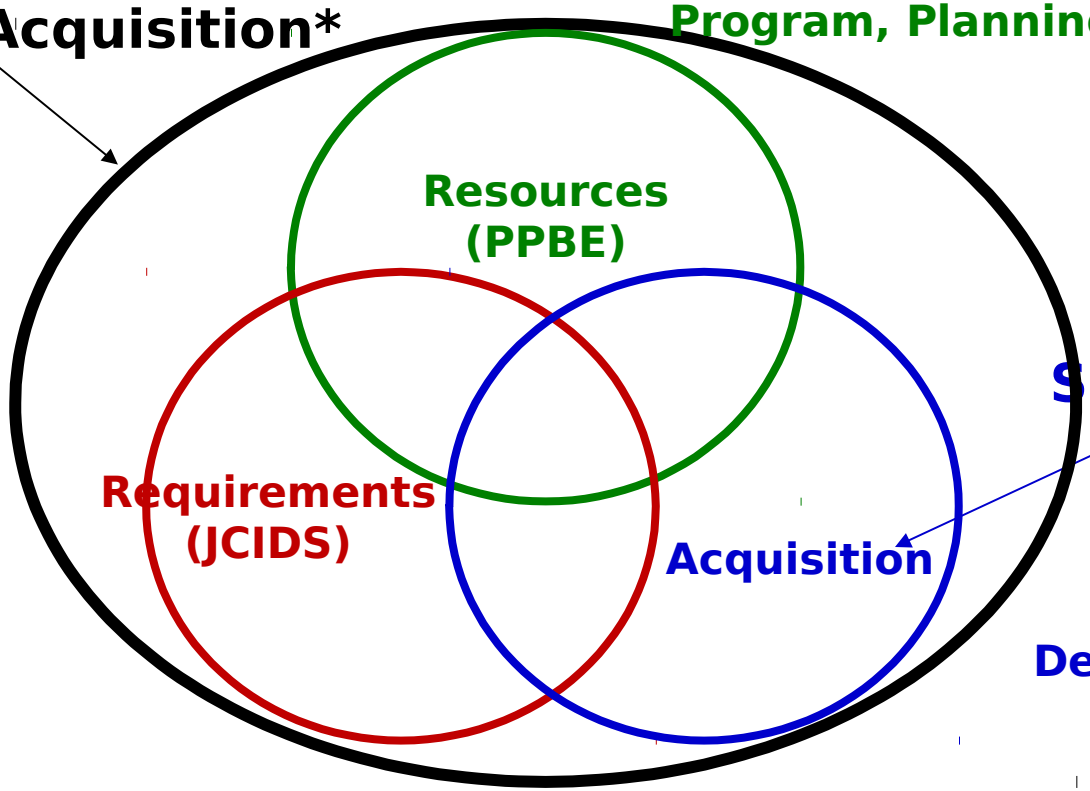
# Agenda

- **Big “A” Acquisition**
  - **Requirements, Resources, Acquisition**
- **Little “a” Acquisition**
  - **DoDI 5000.02, Dec 2008 The Defense Acquisition Management System**
  - **Milestones, Phases and Key Activities**
- **Public Law 111-23, 22 May 2009 Weapon System Acquisition Reform Act (WSARA)**
- **Directive Type Memorandum (DTM) 09-027, 4 Dec 2009 Implementation of the WSARA**

# Big “A” Acquisition

g “A” Acquisition*

Program, Planning, Budgeting, and Executio
(DoD-7000, FMR




Small “a” Acquisition

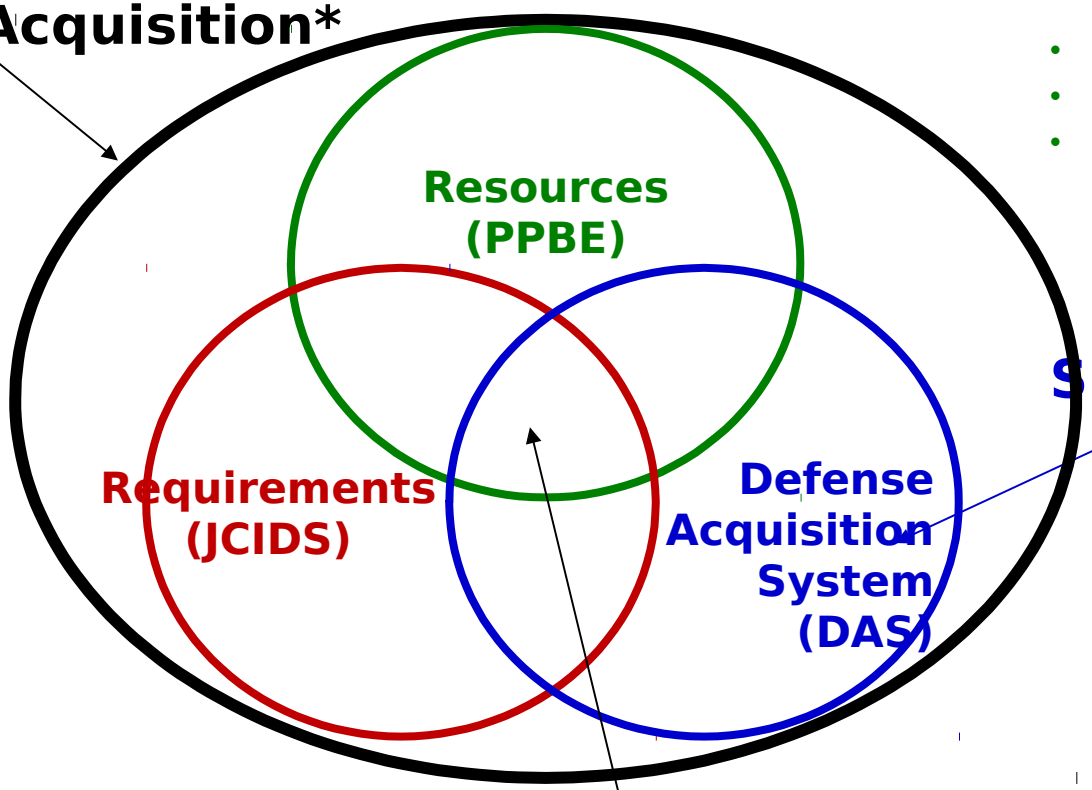
Defense Acquisition System
(DoDI-5000)

int Capabilities Integration and Development System
JCSI-3170)

**Synchronize JCIDS, DAS, and PPBE to deliver capabilities to Warfighters**

# Systemic Issues of Big "A" Acquisition

## g "A" Acquisition*




- Funding instability
- Insufficient resource trade space
- Budget not properly phased/magnitude to support planned development

## Small "a" Acquisition

- Immature technologies
- Inadequate systems engineering
- Inadequate requirements flow-down/ traceability/ decomposition
- Insufficient schedule trade space
- Inadequate implementation of Earned Value Management System
- Lack of time and assets for testing

- Lack of JROC-validated requirements document for basic program (ORD, CDD, CPD)
- Inadequate requirements for basic program and any increments
- Critical dependence on external programs with developmental issues

- Lack of inter- and intra-departmental stakeholder coordination and support

*Systemic Issues of Nunn-McCurdy "Class of 2007" Programs

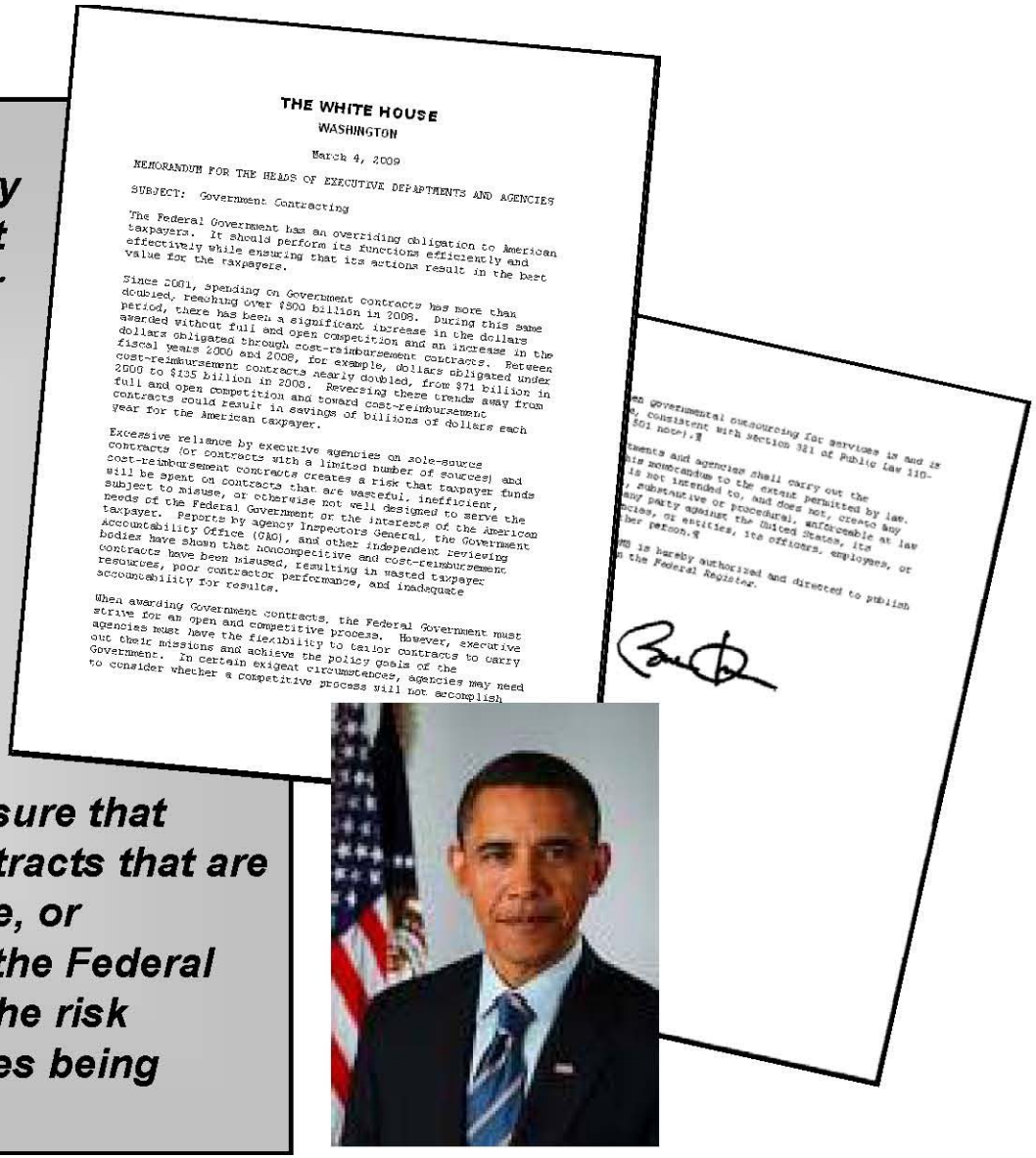
Joint Capabilities Integration and Development System (CJCSI-3170)
Program, Planning, Budgeting, and Execution (DoD-7000, FMRs)
Defense Acquisition System (DoDI-5000)

**Synchronize JCIDS, DAS, and PPBE to deliver capabilities to Warfighters**

# Presidential Direction

*". . . it is essential that the Federal Government have the capacity to carry out robust and thorough management and oversight of its contracts in order to achieve programmatic goals, avoid significant overcharges, and curb wasteful spending. A GAO study last year of 95 major defense acquisitions projects found cost overruns of 26 percent, totaling $295 billion over the life of the projects. Improved contract oversight could reduce such sums significantly.*

*". . . the Federal Government shall ensure that taxpayer dollars are not spent on contracts that are wasteful, inefficient, subject to misuse, or otherwise not well designed to serve the Federal Government's needs and to manage the risk associated with the goods and services being procured. . . .*



THE WHITE HOUSE
WASHINGTON

March 4, 2009

MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

SUBJECT: Government Contracting

The Federal Government has an overriding obligation to American taxpayers. It should perform its functions efficiently and effectively while ensuring that its actions result in the best value for the taxpayers.

Since 2001, spending on Government contracts has more than doubled, reaching over $500 billion in 2008. During this same period, there has been a significant increase in the dollars awarded without full and open competition and an increase in the dollars obligated through cost-reimbursement contracts. Between fiscal years 2000 and 2008, for example, dollars obligated under cost-reimbursement contracts nearly doubled, from $71 billion in 2000 to $135 billion in 2008. Reversing these trends away from full and open competition and toward cost-reimbursement contracts could result in savings of billions of dollars each year for the American taxpayer.

Excessive reliance by executive agencies on sole-source contracts (or contracts with a limited number of sources) and cost-reimbursement contracts creates a risk that taxpayer funds will be spent on contracts that are wasteful, inefficient, subject to misuse, or otherwise not well designed to serve the needs of the Federal Government or the interests of the American taxpayer. Reports by agency Inspectors General, the Government Accountability Office (GAO), and other independent reviewing bodies have shown that noncompetitive and cost-reimbursement contracts have been misused, resulting in wasted taxpayer resources, poor contractor performance, and inadequate accountability for results.

When awarding Government contracts, the Federal Government must strive for an open and competitive process. However, executive agencies must have the flexibility to tailor contracts to carry out their missions and achieve the policy goals of the Government. In certain exigent circumstances, agencies may need to consider whether a competitive process will not accomplish

governmental outsourcing for services is and is consistent with section 321 of Public Law 110-
501 note).¶

ments and agencies shall carry out the
this memorandum to the extent permitted by law.
is not intended to, and does not, create any
, substantive or procedural, enforceable at law
any party against the United States, its
cies, or entities, its officers, employees, or
her person.¶

is hereby authorized and directed to publish
the Federal Register.

# Secretary of Defense Direction

***ief among institutional challenges facing the Department is acquisition***

**"First, this department must consistently demonstrate the commitment and leadership to stop programs that significantly exceed their budget or which spend limited tax dollars to buy more capability than the nation needs…**

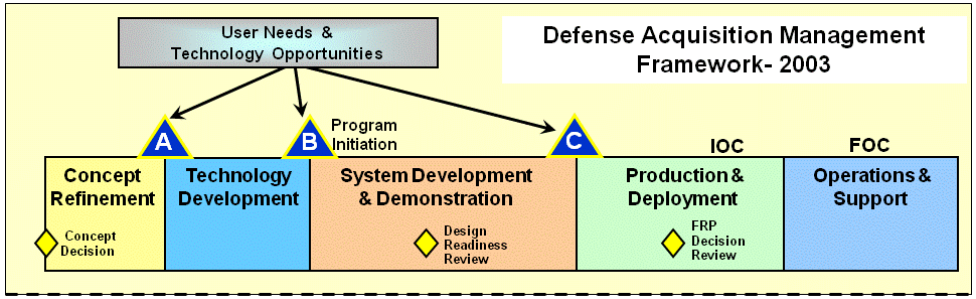
**Second, we must ensure that requirements are reasonable and technology is adequately mature to allow the department to successfully execute the programs…**

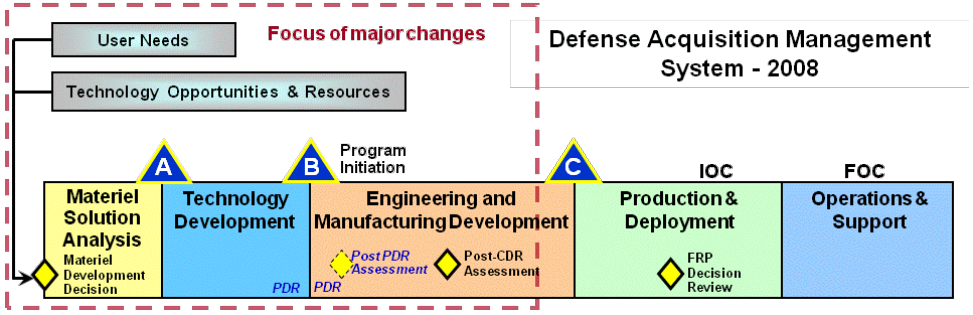
**Third, realistically estimate program costs, provide budget stability for the programs we initiate, adequately staff the government acquisition team, and provide disciplined and constant oversight.**

**We must constantly guard against so-called "requirements creep," validate the maturity of technology at milestones, fund programs to independent cost estimates, and demand stricter contract terms and conditions."**

*Secretary of Defense Robert M. Gates*

# Weapons Systems Acquisition Reform



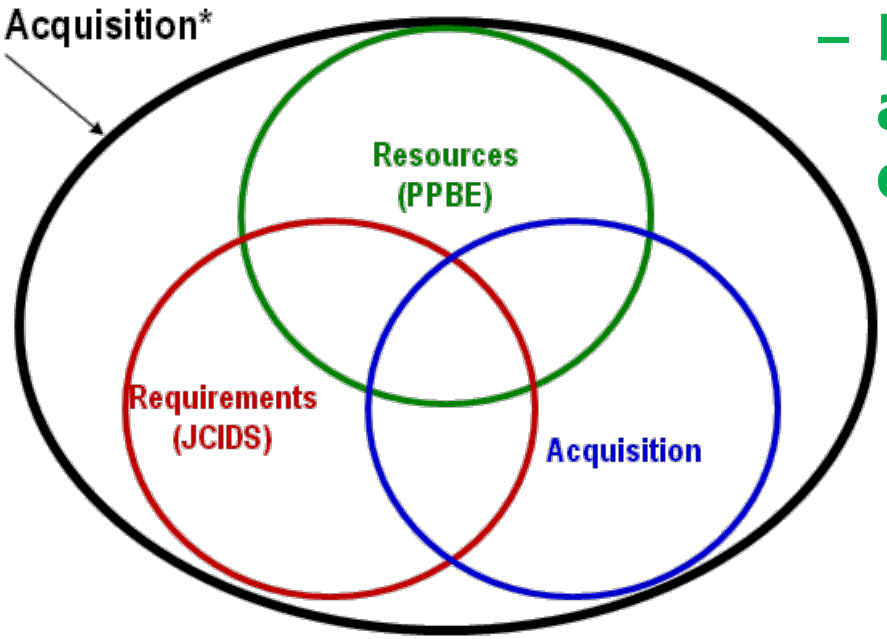




**"The key to successful acquisition programs is getting things right from the start with sound systems engineering, cost estimating, and developmental testing early in the program cycle. The bill that we are introducing today will require the Department of Defense to take the steps needed to put major defense acquisition programs on a sound footing from the outset. If these changes are successfully implemented, they should help our acquisition programs avoid future cost overruns, schedule delays, and performance problems."**
***–Senator Carl Levin, Chairman, Senate Armed Services Committee***

**"The Weapon System Acquisition Reform Act of**

# Bottom Line Up Front

**BLUF: The New DoDI-5000.02 (Dec 2008), the WSARA of May 2009, and the DTM of Dec 2009 intend to move major defense acquisition programs (MDAPs) forward with:**




- **Realistic program cos and schedule estimates**

**Leadersh ip Aspects**

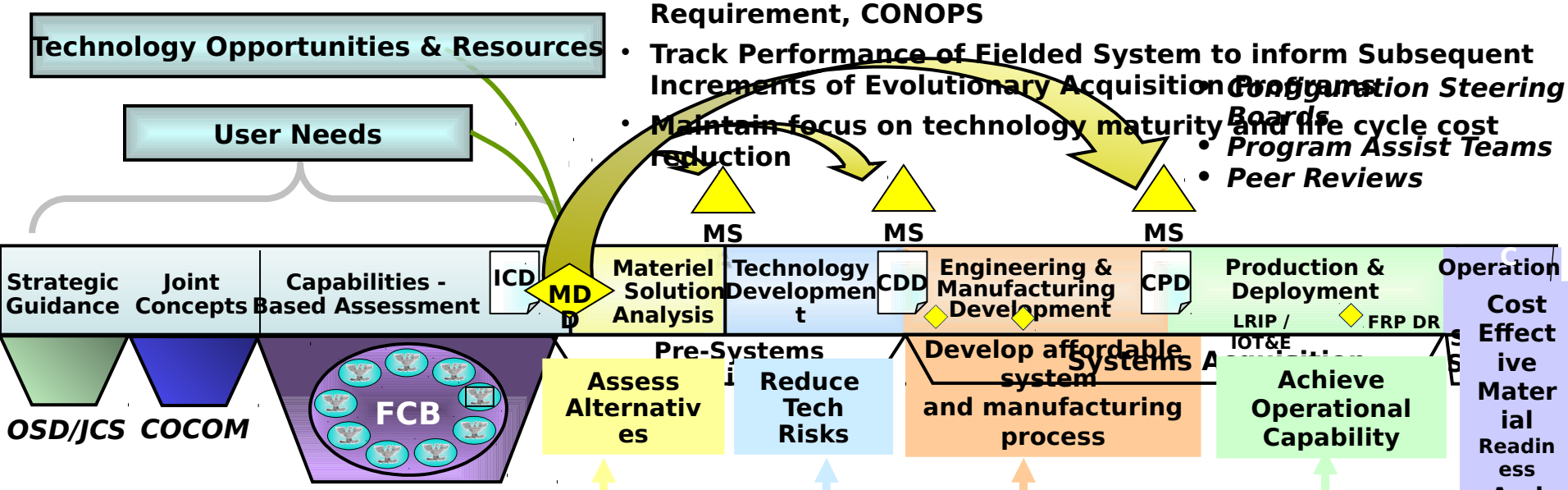
- **Clearly defined and stable requirements**
- **Mature technologies**
- **Solid design and manufacturing processes**

# The Defense Acquisition Management Syste

**Requirements Managers**

- Lead Development of ICD, CDD, CPD informed by acquisition and resourcing processes
- Coordinate With PM On Cost, Schedule and Performance Trades During ICD, CDD, CPD
- Participate in PMO IPTs, Technical Reviews, Program Reviews and Decision Reviews – Answer Questions On Warfighter's Requirement, CONOPS
- Track Performance of Fielded System to inform Subsequent Increments of Evolutionary Acquisition Programs
- Maintain focus on technology maturity and life cycle cost reduction

- *Configuration Steering Boards*
- *Program Assist Teams*
- *Peer Reviews*




- AoA
- Draft CDD
- Draft

- Critical Techno
- Preliminary De
- Prototyping
- Finalize CDD (

- Complete Design
- System Interoper
- Developmental Te
- Operational Assessment
- Manufacturing Process
- Finalize CPD

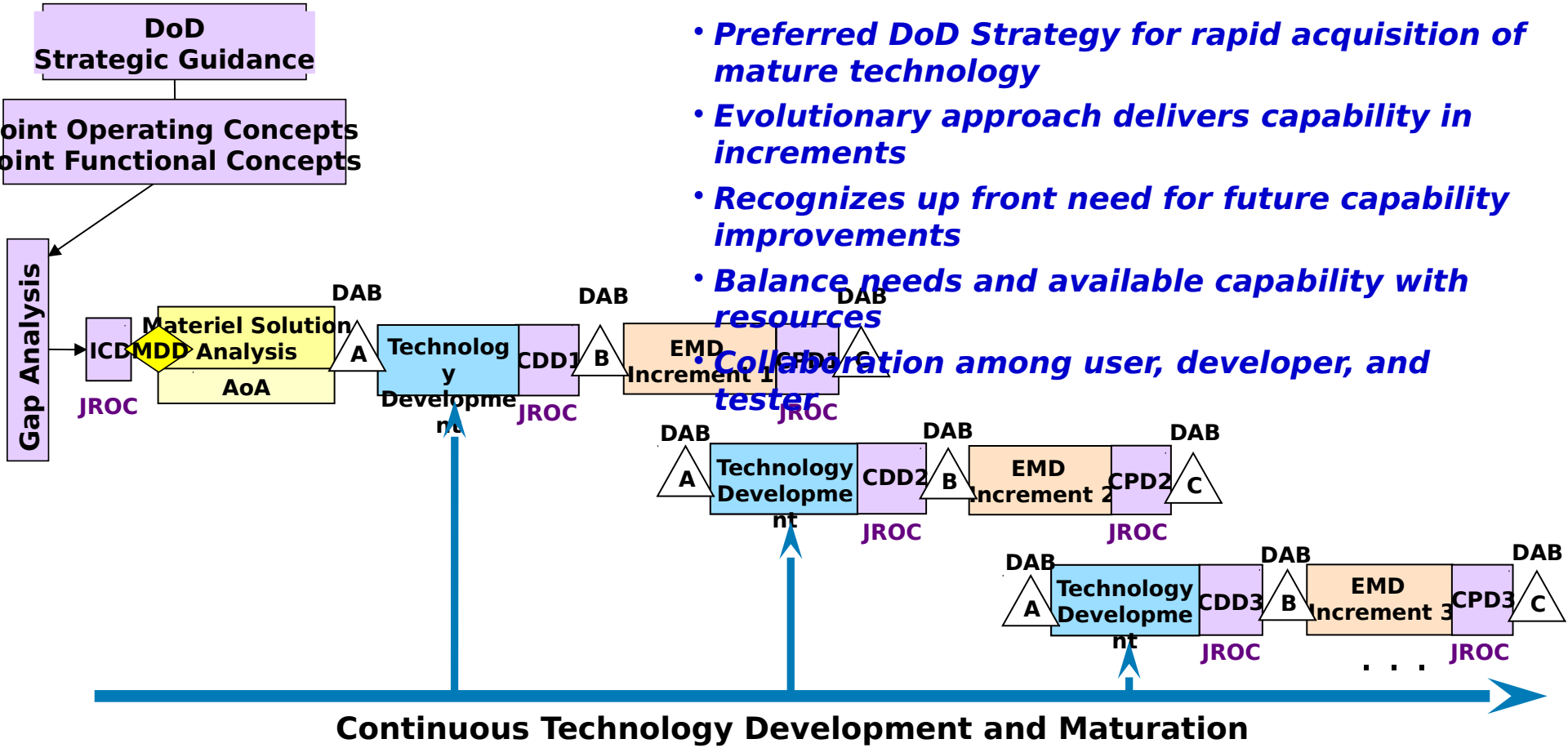
- Low Rate Producti
- Operational Test
- Full Rate Production

Initial Capabilities Document
Capabilities Development Document
Capabilities Production Document
Analysis of Alternatives
Technology Development Strategy
Test and Evaluation Strategy
System Engineering Plan
_____Cost Estimate
Key Performance Parameters*

liminary Design Review
ical Design Review
Rate Production
l Operational Capability
Operational Capability

Incremental Development

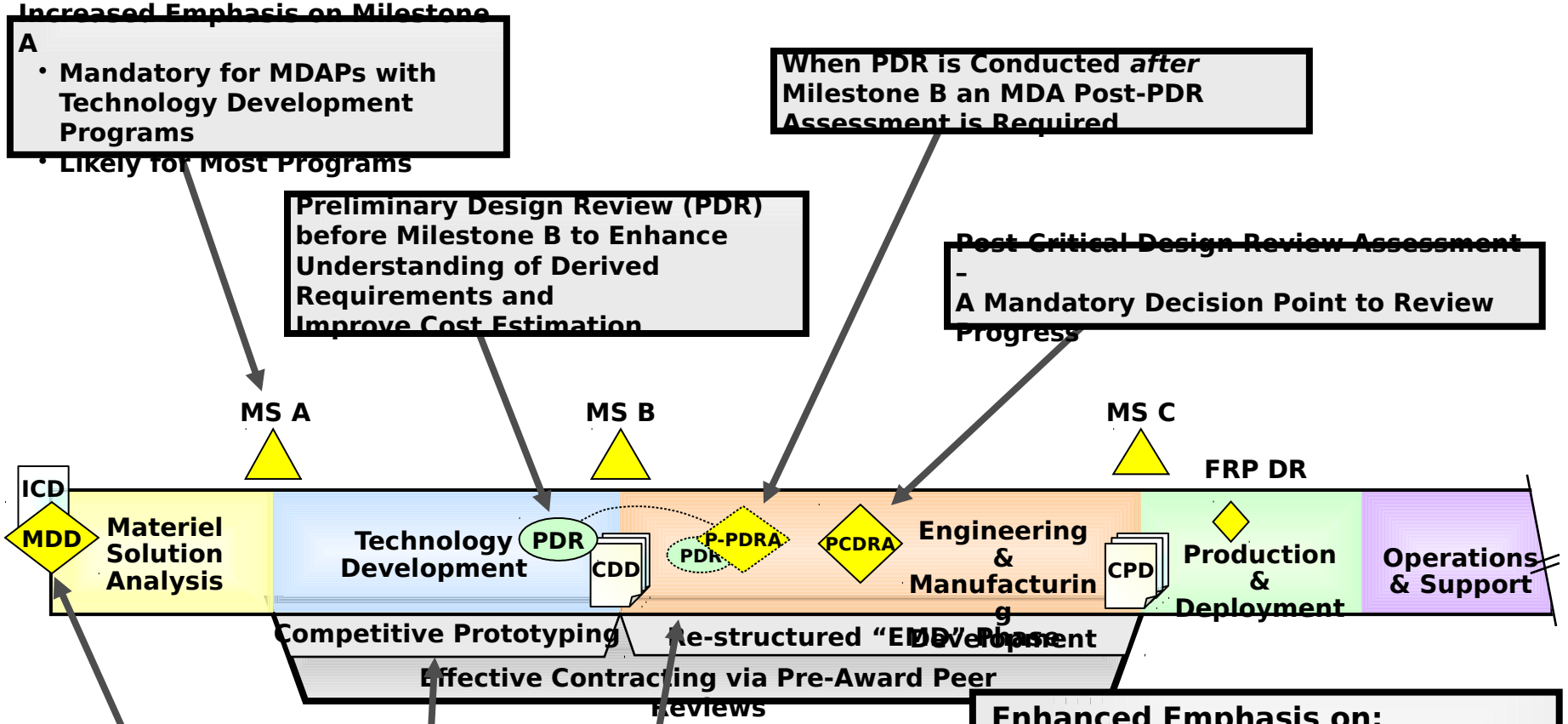
# Evolutionary Approach




- *Preferred DoD Strategy for rapid acquisition of mature technology*
- *Evolutionary approach delivers capability in increments*
- *Recognizes up front need for future capability improvements*
- *Balance needs and available capability with resources*
- *Collaboration among user, developer, and tester*

- *Requires phased definition of capability needs, system requirements, and maturation of technologies*
- *Each increment:*
  - *Offers militarily useful and supportable operational capability*
  - *Requires its own set of threshold and objective values set by user*
  - *Provides increasing capability over time*

# Key Acquisition Business Process Changes


Increased Emphasis on Milestone A
• Mandatory for MDAPs with Technology Development Programs
• Likely for Most Programs
When PDR is Conducted *after* Milestone B an MDA Post-PDR Assessment is Required
Preliminary Design Review (PDR) before Milestone B to Enhance Understanding of Derived Requirements and Improve Cost Estimation
Post-Critical Design Review Assessment – A Mandatory Decision Point to Review Progress
MS A
MS B
MS C
FRP DR
ICD
MDD
Materiel Solution Analysis
Technology Development
PDR
CDD
PDR
P-PDRA
PCDRA
Engineering & Manufacturing Development
CPD
Production & Deployment
Operations & Support
Competitive Prototyping
Re-structured "EMD" Phase
Effective Contracting via Pre-Award Peer Reviews
Materiel Development Decision – Mandatory Process Entry Point
Competitive Prototyping
Configuration Steering Boards Established to Stabilize Requirements
Enhanced Emphasis on:
• Technology Maturity
• Systems Engineering
• Integrated Testing and Test Planning
• Manufacturing and Producibility
• Logistics and Sustainment Planning

# Implementation of the Weapon Systems Acquisition Reform Act (WSARA) of 2009

## WSARA:

- Signed by President May 22, 2009 (Public Law 111-23)
- Established requirements that directly impact operation of the Defense Acquisition System and duties of key officials
- Directive-Type Memorandum (DTM) 09-027, 4 Dec 2009, implements WSARA
- DTM amends Acquisition Policy in DoDI 5000.02 the Defense Acquisition Guidebook and the Defense Federal Acquisition Regulation Supplement (DFARS)
- The DTM is effective immediately and will be incorporated into the above within 180 days.

***WSARA DTM is available at http:www.ditic.mil/whs/directives***

# Implementation of WSARA
## Changes to Policy and Procedure

1. Analysis of Alternatives Study Guidance
2. Acquisition Strategies to Ensure Competition
3. Competition and Considerations for the Operation and Sustainment (O & S) of Major Weapon Systems
4. Competitive Prototyping
5. Cost Estimation
6. Developmental Test and Evaluation (DT&E)
7. Systems Engineering (SE)
8. Performance Assessments and Root Cause Analysis (PARCA)
9. Assessment of MDAP Technolo
10. Preliminary Design Reviews (P
11. Certification IAW 10 USC 2366
12. Critical Cost Growth

Most apply to MDAPs (ACAT I); some apply to MAIS (ACAT IA); some apply only to MDAPs/MAIS for which USD(AT&L) is MDA (ACAT ID/IAM); some apply to Major Weapon Systems (ACAT II); some apply to non-major programs

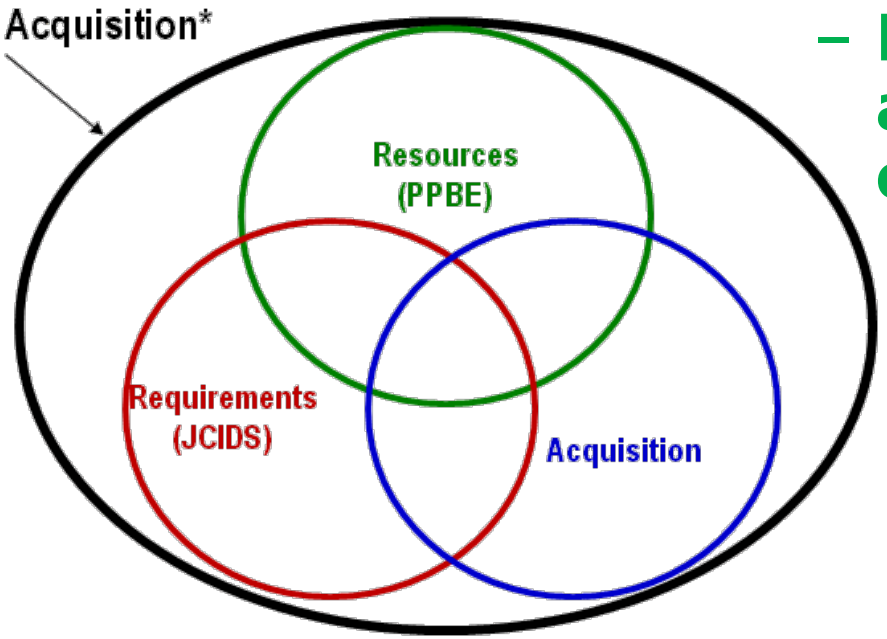
# Required Reports

| Report | From | To | Due Date |
|---|---|---|---|
| Assessment of previous years cost estimation and analysis activities (unclas ver. Must be posted to DoD public web site) | CAPE | Concurrently to: SECDEF, USD(AT&L), USD(C) and Congress | Annually within 10 days of President's Budget submission |
| O&S Costs for MDAPs, including advisability of establishing O&S cost baselines | CAPE | SECDEF; SECDEF to Congress | May 2010 |
| Joint Report on DT&E and Sys Engineering Activities | DT&E & SE | Congress | Annually NLT Mar 31 |
| Implementation of Resource Planning for DT&E and Sys Engineering Activities | CAEs w/MDAPs | Congress | Nov 2009 |
| Performance Assessments and Root Cause Analysis Activities | OSD (TBD) | Congress | Annually NLT Mar 1 |
| Technology Maturity & Integration Risk of MDAPs | DDR&E | Congress | Annually NLT Mar 10 |
| Resources Needed to Implement Technology Maturity and Integration Risk Assessments | DDR&E | Congress | Nov 2009 |
| Role of COCOMs in Joint Requirements Process | GAO | Congress | May 2011 |
| Notification of Waiver for Competitive Prototyping Due to Excessive Costs | MDA | Congress and GAO | 30 Days after waiver |
| Funding Changes Due to Critical Cost Growth in MDAPs | OSD | Congress | First SAR in CY after program restructure |
| Growth in O&S Costs of Major Systems | GAO | Congress | May 2010 |
| Review of Weaknesses In Operations Relating to Financial Information for MDAPs | GAO | Congress | May 2010 |

Weapon Systems Acquisition Reform Act of 2009

# Summary

**BLUF: The New DoDI-5000.02 (Dec 2008), the WSARA of May 2009, and the DTM of Dec 2009 intend to move major defense acquisition programs (MDAPs) forward with:**




- **Realistic program cost and schedule estimates**
- **Clearly defined and stable requirements**
- **Mature technologies**
- **Solid design and manufacturing processes**

Defense Acquisition University

# Backups

# Implementation of WSARA
## AoA Study Guidance

- **Director, Cost Analysis and Program Evaluation (DCAPE)**
  - **Leads development of AoA Study Guidance, for**
  - **Joint requirements for which JROC is validation authority**
- **Milestone Decision Authority (MDA) directs initiation of the AoA in Materiel Development Decision (MDD) Acquisition**

- **DCAPE consolidates the responsibilities of Dir, Program Analysis & Evaluation (Dir, PA&E) and Chairman, Cost Analysis Improvement Group (CAIG)**
- **JROC Validates "JROC Interest" requirements - applies to all potential and designated ACAT I/IA programs and capabilities that have a potentially significant impact on interoperability in allied and coalition operations.**
- ***Policy Impact: MDA no longer approves AoA Study Guidance***

# Implementation of WSARA
## Acquisition Strategies to Ensure Competition

- **Acquisition strategy for MDAPs must describe measures to ensure competition, or option of competition, at both prime and subcontract level throughout life-cycle**
- **Measures may include (if cost effective):**
  - Competitive prototyping
  - Dual-sourcing
  - Unbundling of contracts
  - Funding of next-generation prototypes or subsystems
  - Modular, open-architectures
  - Built-to-print approaches (Acquisition of complete Technical Data Package (TDP)
  - Competition for subsystem upgrades
  - Licensing of additional suppliers
  - Program reviews to address competitive long-term effects of program decisions
- **Strategy must document rationale for selection of subcontract tier or tiers, and indicate that primes must give consideration to sources other than the**

***Policy Impact:** More detailed discussion of competition in acquisition strategy; planning for competition must provide small business with maximum practical opportunity to*

# Implementation of WSARA
## Competition & Considerations for O&S

- **Acquisition strategy for Major Weapon Systems must describe plan for identifying/selecting source of repair**
- **MDA will ensure that, to the maximum extent practicable, and consistent with statutes, maintenance and sustainment contracts are competitively awarded, and**
- **Full consideration for contract award to private sector repair activities**

***Policy Impact: More detailed discussion of maintenance and sustainment strategy and contracting approach in the acquisition strategy for ACAT I and II programs.***

# Implementation of WSARA
## Competitive Prototyping

- **Technology Development Strategy (TDS) for MDAPs shall provide for prototypes of the system or, if system prototype is not feasible, for prototypes of critical sub-systems before MS B approval**
- **MDA may waive if**
  - **Cost exceeds life-cycle benefits (constant year dollars), including benefits of improved performance and increased technological and design maturity**
  - **DoD would not be able to meet national security objectives without a waiver.**
  - **If waived, a prototype still must be produced before MS B approval if expected life cycle benefits exceed cost of the prototype, and production of prototype is**
- **If**

***Policy Impact: Unless waived under conditions described, competitive prototyping now a statutory requirement for MDAPs***

**MDAP congressional defense committees and**

# Implementation of WSARA
## Cost Estimation: Role of Director, CAPE

- Provides policies and procedures for conduct of all DoD cost estimates
- Reviews Component cost estimates/analysis conducted for MDAPs & MAIS
- Conducts ICE and cost analysis for MDAPs for which USD(AT&L) is MDA in advance of:
  - Certifications pursuant to 10 USC 2366a (MS A), 2366b (MS B), or 2433a (critical cost growth in MDAPs);
  - Any decision to enter LRIP or full rate production
  - As requested by USD(AT&L) or considered appropriate by DCAPE
- Conducts ICE and cost analysis for MAIS programs for which the USD(AT&L) is MDA in advance of:
  - Any report pursuant to 10 USC 2445c(f) (critical

# Implementation of WSARA
## Cost Estimation: Role of DCAPE, continued..

- Receives results of all cost estimates/analysis and associated studies conducted by Components for MDAPS and MAIS; has access to all DoD data necessary to review cost analyses and execute DCAPE responsibilities
- Participates in discussions of discrepancies related to MDAP and MAIS cost estimates and comments on deficiencies related to methodology or execution of the estimates
- Concurs with choice of cost estimate used to support the APB and in support of MDAP and MAIS requirements
- Participates in decisions to request multi-year

*Policy Impact: Adds requirement for ICE for MDAPs for which the USD(AT&L) is the MDA in advance of MS A Certification, Full Rate Production Decision, and in support of indicated certifications and reports. An ICE will be required for MAIS programs for which USD(AT&L) is the MDA only if there has been a Critical Change*

for MDAP & MAIS, and if less than 80%, why

# Implementation of WSARA
## Dir, DT&E and Dir SE

- **Role of Director, Developmental Test & Evaluation (DT&E)**
  - **Reviews and approves DT&E plan in the TES and TEMP for MDAPs and all programs on the OSD DT&E Oversight List**
  - **Monitors and reviews DT&E of MDAPs**
  - **Has access to all Component records and data necessary to carry out duties**
- **Role of Director, Systems Engineering**
  - **Reviews and approves the SEP for MDAPs**

***Policy Impact: Dir, DT&E (instead of USD(AT&L) reviews and approves DT portion of the TES and TEMP; Dir, SE (instead of DUSD(A&T)) reviews and approves SEPs for all MDAPs.***

# Implementation of WSARA
## Performance Assessment & Root Cause Analysis (PARCA)

**Role of the senior official for PARCA:**

- **Conduct performance assessments for MDAPs periodically or when requested by SECDEF, USD(AT&L), Secretary of Military Dept, or head of Defense Agency**
- **Conduct root cause analysis for MDAPs as required by 10 USC 2433a, or when requested by SECDEF, USD(AT&L), Secretary of Military Dept, or head of Defense Agency**
- **Advise acquisition officials on MDAP performance issues:**
  - **Prior to certification under 10 USC 2433a (critical**
  - **Prior to entry into full-rate production; and**

***Policy Impact: Newly established position to perform required functions***

# Implementation of WSARA

## Performance Assessments

- Evaluate the cost, schedule, and performance of the program, relative to current metrics, performance requirements, and baseline parameters
- Determine the extent to which the level of program cost, schedule, and performance relative to established metrics is likely to result in the timely delivery of a level of capability to the warfighter that is consistent with the level of resources to be expended and to provide superior value to alternative approaches that may be available to meet the same requirement

# Implementation of WSARA

## Root Cause Analysis

**Considers the underlying cause or causes for shortcomings in cost, schedule, and performance including the role, if any, of:**

- **Unrealistic performance expectations;**
- **Unrealistic baseline estimates for cost and schedule;**
- **Immature technologies or excessive manufacturing or integration risk;**
- **Unanticipated design, engineering, manufacturing, or integration issues arising during program performance;**
- **Changes in procurement quantities;**
- **Inadequate program funding or funding instability;**
- **Poor performance by government or contractor**

# Implementation of WSARA

## Assessment of MDAP Technologies

**Director of Defense Research and Engineering (DDR&E) shall:**

- **Independently review, assess, and report on the technological maturity of MDAP technologies in support of MS B reviews, associated statutory certifications, and at other times designated by the USD (AT&L).**
- **Develop knowledge-based standards against which to measure the technological maturity and integration risk of critical technologies at key stages in the acc… f cor… ass…**

***Policy Impact: DDR&E to independently review, assess, and report the maturity of MDAP technologies prior to MS B Certification. Also, DDR&E will develop standards that will be used to measure and assess the maturity of critical technologies and integration risk in MDAPs***

# Implementation of WSARA

## Preliminary Design Reviews (PDR)

- **PDRs before MS B are mandatory for all MDAPs**
  - **Reflected in Technology Development Strategy (TDS) to be approved by the MDA at MS A.**
  - **Post-PDR assessments conducted in association with MS B preparations and will be considered by the MDA at MS B certification review.**
- **PDRs before MS B for other than MDAPs will be approved by the MDA when consistent with TDS or Acquisition Strategy objectives.**
  - **PDR conducted before MS B: a post-PDR assessment will be conducted in association with**

***Policy Impact: PDR before MS B is statutory requirement for MDAPs. Post-PDR Assessment will be conducted during MS B review, and prior to 2366b certification.***

**post-PDR assessment at a time reflected in the**

# Implementation of WSARA
## Program Certifications IAW 10 USC 2366a and 2366b

- **Requirements for MDA program certification at Milestone A (10 USC 2366a) and MS B (10 USC 2366b) were amended**
- **Ongoing MDAPs initiated prior to 22 May 2009 and will not have received a MS A certification or MS B certification prior to May 22, 2010, must receive a MS A certification NLT May 22, 2010**
- **Any MDAP that received a MS B approval prior to January 6, 2006, and has not yet received a MS C approval, the MDA, not later than February 16, 2010, must determine wh the amended by WSARA. This determination will**

*Policy Impact: The MS A and MS B Certification requirements have changed. Required statements for the ADM, and changes to the certification statements are highlighted on following charts.*

# Implementation of WSARA
## Program Certifications IAW 10 USC 2366a and 2366b

**Following statements must be added to the ADM:**

**MS A:** "I have reviewed the program and have made the certifications required by Section 2366a of Title 10, United States Code. At any time prior to Milestone B approval, the Program Manager shall notify me immediately if the projected cost of the program exceeds the cost estimate for the program at the time of Milestone A certification by at least 25 percent or the PM determines that the period of time required for the delivery of an initial operational capability is likely to exceed the schedule objective provided at the time of Milestone A certification by more that 25 percent."

**MS B:** "I have reviewed the program and the business case analysis and have made the certifications required, or executed a waiver of the applicability of one or more of the components of the certification requirement as authorized by Section 2366b of Title 10, United States Code. The Program Manager shall notify me immediately of any changes to the program that alter the substantive basis for the certification

# Implementation of WSARA
## Critical Cost Growth (1)

**DTM contains policy implementing new 10 USC 2433a, Critical Cost Growth of MDAPs, that amends 10 USC 2433, Unit Cost Reports, and supersedes all previous USD(AT&L) policies addressing actions that must be taken following critical cost growth of a MDAP or designated subprogram**

- **PM shall notify the CAE immediately, whenever there is a reasonable cause to believe that the current estimate of either the program acquisition unit cost (PAUC) or average procurement unit cost (APUC) of a MDAP or designated subprogram (in base-year dollars) has increased by 25 percent (or more) over the PAUC or APUC objective of the currently approved APB estimate, or 50 percent (or more) over the PAUC or APUC of the original APB estimate.**

- **If the CAE determines that there is an increase in the current estimate of the PAUC or APUC of at least 25 percent over the PAUC or APUC objective of the**

# Implementation of WSARA
## Critical Cost Growth (2)

- If the **Component Head subsequently determines that there is, in fact, an increase** in the current estimate of the PAUC or APUC of at least 25 percent over the currently approved APB, or 50 percent over the PAUC or APUC of the original APB, the **Head of the DoD Component shall notify Congress, in writing,** of the determination of critical cost growth and the increase with respect to the program or subprogram concerned.
- The notification shall be not later than 45 days after the end of the quarter, in the case of a quarterly report; or not later than 45 days after the date of the report, in the case of an out-of-cycle report based on critical change occurring between quarters. In either case, notification shall include the date that the Head of the DoD Component made the determination.
- In addition, the **Component Head shall submit an SAR** for either the fiscal year quarter ending on or after the determination date, or for the fiscal year quarter that immediately precedes the fiscal year quarter ending on

# Implementation of WSARA
## Critical Cost Growth (3)

- **The USD(AT&L), after consultation with the JROC, shall determine the root cause or causes of the critical cost growth in accordance with applicable statutory requirements and DoD policies, procedures, and guidance based upon the root cause analysis conducted by the senior official for PARCA; and in consultation with the DCAPE, shall carry out an assessment of:**

  **a. The projected cost of completing the program if current requirements are not modified.**

  **b. The projected cost of completing the program based on reasonable**

  **modification of such requirements.**

  **c. The rough order of magnitude of the costs of any reasonable alternative system or capability.**

  **d. The need to reduce funding for other programs due to the growth in cost of the program.**

# Implementation of WSARA
## Critical Cost Growth (4)

- **After conducting the reassessment, the USD(AT&L) shall terminate the program unless the USD(AT&L) submits a written certification to Congress before the end of the 60-day period beginning on the day the SAR containing the unit cost information is required to be submitted to Congress. The certification must state:**

  **a. The continuation of the program is essential to the national security.**

  **b. There are no alternatives to the program that will provide acceptable capability to meet the joint military requirement (as defined in section l8l(g)((1) of Title 10, U.S.C) at less cost.**

  **c. The new estimates of the PAUC or APUC have been determined by the DCAPE, to be reasonable.**

  **d. The program is a higher priority than programs whose funding must be reduced to accommodate the growth in cost of the program.**

# Implementation of WSARA
## Critical Cost Growth (5)

- The written certification shall be accompanied by a report presenting the root cause analysis and assessment and basis for each determination made in accordance with the five certification criteria listed previously
- If the USD(AT&L) elects NOT to terminate a MDAP that has experienced critical cost growth, the Secretary of Defense shall:
  - a. Restructure the program in a manner that addresses the root cause or causes of the critical cost growth, and ensures that the program has an appropriate management structure as set forth in the written certification;
  - b. Rescind the most recent milestone approval for the program or designated subprograms and withdraw any associated certification(s) pursuant to section 2366a or 2366b.
  - c. Require a new milestone approval for the program or designated subprograms before taking any contract action to enter a new contract, exercise an option under an existing contract, or otherwise extend the scope of an existing contract under the program, except to the extent determined necessary by the MDA, on a non-delegable basis, to ensure that the program can be restructured as intended by the Secretary of Defense without unnecessarily wasting resources.
  - d. Include in the report a description of all funding changes made

# Implementation of WSARA
## Critical Cost Growth (6)

- Additionally, for each MDAP that has exceeded the critical cost thresholds, but has not been terminated, the senior official for PARCA shall conduct semi-annual reviews until 1 year after the date a new milestone approval is received. The senior official for PARCA, shall report the results of the semi-annual reviews to the USD(AT&L) and summarize the results in the Director's next annual report.
- If a MDAP is terminated after experiencing a critical cost breach, the USD(AT&L) shall submit to Congress a written report with the following information:

  a. An explanation of the reasons for terminating the program.

  b. The alternatives considered to address any problems in the program.

  c. The course the Department of Defense plans to pursue to meet any continuing joint military requirements otherwise intended to be met by the program.

# Implementation of WSARA

## Revised MDAP Definition

**A MDAP is a Department of Defense acquisition program that is not a highly sensitive classified program and:**

**a. that is designated by the USD (AT&L) as an MDAP; or**

**b. that is estimated to require an eventual total expenditure for research, development, test, and evaluation, *including all planned increments**, of more than $365M (based on fiscal year 2000 constant dollars) or an eventual total**

***Change to definition highlighted in blue italics**

***Policy Impact: The revised definition may result in a change in MDA***

**[illegible] *all planned increments**, of more than**

# Other WSARA Changes Not Directed by the D

- The organizational changes required by WSARA sections 101 and 102 were implemented in the following memos:
  1. DEPSECDEF Memorandum for Distribution, subject: Initial Implementation Guidance for the Office of the Director of Cost Assessment and Program Evaluation, 9 Jun 2009. Directed establishment of new Presidentially appointed, Senate confirmed position and transferred all functions of the Office of the Director of Program Analysis and Evaluation to the new office.
  2. USD(AT&L) Memorandum for OUSD(AT&L) Component Heads, subject: Organizational Changes, 23 Jun 2009. Implemented move of SE and DT&E from DUSD(A&T) to DDR&E.
  3. DDR&E Memorandum for Offices of the DDR&E, subject DDR&E Reorganization, 21 Aug 2009. Directed internal realignments for DDR&E.
- The role of the COCOM Commanders in identifying joint

# *Materiel Development Decision (MDD)*

## MDA:

- ***Receives ICD and AoA Study Guidance***
- ***Determines acquisition phase of entry***
- ***Identifies initial review milestone***
- Designates Lead DoD Component
- Approves Acquisition Decision Memorandum(ADM)

**Regulatory Requirements**

- Initial Capabilities Document (ICD)
- ***AoA Study Guidance (AoA Plan due immediately following the MDD)***

**New terms/requirements in *bold blue italics***

# Milestone A

**MDA approves:**

- ***Materiel solution***
- Technology Development Strategy (TDS)
- Exit criteria for next phase
- ***Milestone A Certification (10 USC 2366a)***
- Acquisition Decision Memorandum (ADM)

**Statutory & Regulatory Requirements**

- Acquisition Decision Memorandum (ADM)
- Analysis of Alternatives (AoA)
- Acquisition Information Assurance Strategy
- Clinger-Cohen Act (CCA) Compliance
- CIO Confirmation of CCA Compliance ***(for MDAPs & MAIS, DoD CIO confirms)***
- Consideration of Technology Issues
- ***Component Cost Estimate (CCE)***
- Economic Analysis (MAIS)
- Exit Criteria
- Initial Capabilities Document (ICD)
- ***Item Unique Identification (IUID) Implementation Plan***
- ***Life Cycle Signature Support Plan***
- Market Research
- ***MDA Program Certification***
- Program Protection Plan (PPP)
- ***Systems Engineering Plan (SEP)***
- Technology Development Strategy (TDS)
- Test & Evaluation Strategy (TES)

**New terms/requirements in *bold blue italics***

# Implementation of WSARA
## Program Certification for MS A (10 USC 2366a)

MEMORANDUM FOR THE RECORD

SUBJECT: Milestone A Program Certification

As required by Section 2366a of Title 10, United States Code, I have consulted with the Joint Requirements Oversight Council (JROC) on matters related to program requirements and military needs for the *(name of program)* and certify that:

(1) the program fulfills an approved initial capabilities document;

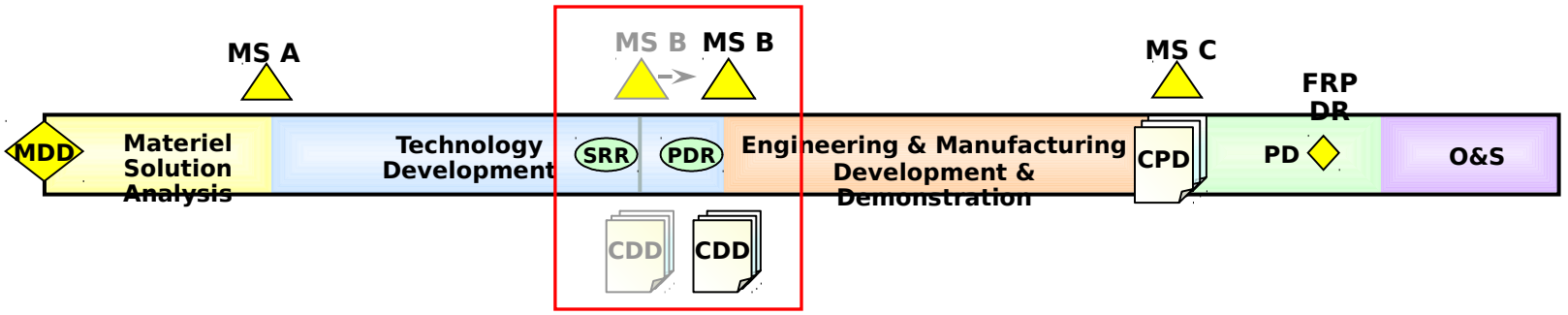
(2) the program is being executed by an entity with a relevant core competency as identified by the Secretary of Defense;

(3) ***an analysis of alternatives has been performed consistent with the study guidance developed by the Director of Cost Assessment and Program Evaluation;***

(4) a cost estimate for the program has been submitted, ***with the concurrence of the Director of Cost Assessment and Program Evaluation***, and the level of resources required to develop and procure the program is consistent with the priority level assigned by the JROC; and,

(5) [*include only if the system duplicates a capability already provided by an existing system*] the duplication of capability

# Preliminary Design Review Precedes MS B



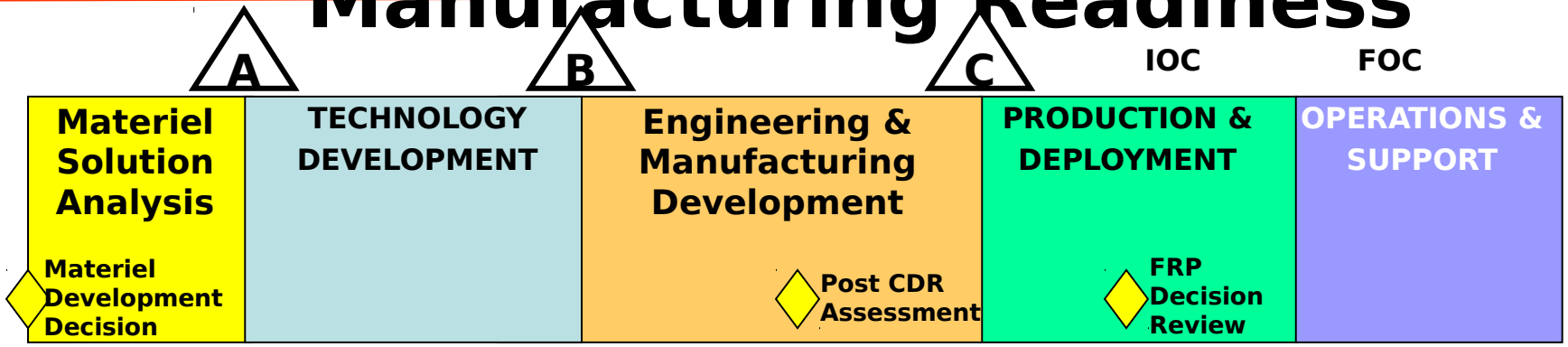

**"A Preliminary Design Review (PDR) shall be conducted for the candidate design(s) to establish the allocated baseline (hardware, software, human/support systems) and underlying architectures and to define a high-confidence design. All system elements (hardware and software) shall be at a level of maturity commensurate with the PDR entrance and exit criteria. A successful PDR will inform requirements trades; improve cost estimation; and identify remaining design, integration, and manufacturing risks. The PDR shall be conducted at the system level and include user representatives and associated certification authorities. The PDR Report shall be provided to the MDA at Milestone B and include recommended requirements trades based upon an assessment of cost, schedule, and performance risk."**

| | |
|---|---|
| **CHARACTERISTICS** | MS B moved "to the right" to allow contractor preliminary design to inform requirements, estimated costs, and schedule. |
| **PROCESS** | Technology Development extended through formal Preliminary Design Review (PDR). Preliminary design to facilitate trades before JROC approval. Competitive environment sustained up to and perhaps through MS B. MDA conducts MS B review as described in current policy. |
| **SUPPORTING INFORMATION** | PDR Report from PM.<br>Current statutory and regulatory information |

**BENEFITS**

- Ties program decision to event-based (product-based) technical review
- Most derived requirements surfaced
- Better understanding of cost, schedule, and performance risk when the APB is approved and SAR reporting begins
- Opportunity for MDA to defer (in coordination with requirements authority) unachievable requirements to next increment
- Final requirements informed by detailed design
- Early indicator of manufacturing and production issues
- Logical extension of prototyping and competition policy

# Technology and Manufacturing Readiness




| TRLs 1-3 | TRL 4 | TRL 5 | TRL 6 | TRL 7 | | TRL 8 | TRL 9 |
|---|---|---|---|---|---|---|---|
| Analytical/ Experimental Critical Function/ Characteristic Proof of Concept | Component And/or Breadboard Validation In a Laboratory Environment | Component And/or Breadboard Validation In a Relevant Environment | System/ Subsystem Model or Prototype Demonstrated In a Relevant Environment | System Prototype Demonstrated In an Operational Environment | | Actual System Completed Qualified Through Test and Demonstration | Actual System "Mission Proven" Through Successful Operations |
| **MRLs 1-3** | **MRL 4** | **MRL 5** | **MRL 6** | **MRL 7** | **MRL 8** | **MRL 9** | **MRL 10** |
| Manufacturing Feasibility Assessed. Concepts defined/ developed | Capability to produce Technology In Lab Environment. Manufacturing Risks Identified | Capability to Produce Prototype Components | Capability to Produce System/ Subsystem Prototypes | Capability to Produce Systems, Subsystems Or Components in a Production Representative Environment | Pilot Line Capability Demonstrated. Ready for LRIP | Low Rate Production Demonstrated. Capability In Place for FRP | Full Rate Production Demonstrated. Lean Production Practices In Place |
| | **Manufacturing Cost Drivers Identified** | **Cost Model Constructed** | **Detailed Cost Analysis Complete** | **Cost Model Updated To System Level Unit Cost Reduction Efforts Underway** | **Engineering Cost Model Validated** | **LRIP Cost Goals Met Learning Curve Validated** | **FRP Unit Cost Goals Met** |

Technology Readiness Levels
Defense Acquisition Guidebook para. 10.5.2

Manufacturing Readiness Levels
Draft MRA Deskbook May 2008

Section 2366b of Title 10, United States Code, requires certification that: the **technology** in the program has been demonstrated in a **relevant** environment to enter Milestone B. [TRL 6]

# Key Performance Parameters, Key System Attributes

## Key Performance Parameters (KPPs)

- Attributes or Characteristics of a System
- Critical or Essential
  - To develop an effective military capability
  - To significantly contribution to the characteristics of the future joint force
- Must be Testable
  - Enable feedback from T&E
- Validated by the JROC for JROC Interest Documents

## Key System Attributes (KSAs)

- Attributes Most Critical or Essential
- Not Selected as a KPP
- An Additional Level of Capability Prioritization Below the KPP
- Only Senior Leadership can Change a KSA
  - Sponsor 4-star
  - Defense agency commander
  - Principal Staff Assistant

# Required KPPs/KSAs

JCIDS Manual, xx Jun 2009

- **Survivability KPP.** Mandatory for manned systems and systems designed to enhance personnel survivability in an asymmetric threat environment – KPPs that contribute to survivability (speed, maneuverability, detectability, and countermeasures)
- **Force Protection KPP.** Mandatory for manned systems and systems designed to enhance personnel survivability in an asymmetric threat environment – KPPs that contribute to protection of personnel (prevent or mitigate hostile actions against personnel)
- **Material Availability KPP.** Mandatory – measure of inventory that is operationally ready
  - **Material Reliability KSA.** Mandatory – probability that system will perform without failure over a specified interval
  - **Ownership Cost KSA.** Mandatory – unit operations, energy (POL, fuel – fully burdened cost, maintenance, sustaining support)
- **Net-Ready KPP** – required for all IT and NSS used to enter, process, store, display, or transmit information. (except systems that do not communicate with external sources)
- **KPPs traceable to CCJO –** required for systems with a primary mission or other attributes that contribute to one or more of the Capstone Concept for Joint Operations (CCJO) characteristics of the future joint force. (KPPs for attributes "most essential" to the capability)

# Selectively Applied KPPs

**JCIDS Manual**

***Sponsor analysis will determine whether to adopt these parameters as KPPs. If not adopted, summary of justification for not adopting must be provided in the CDD.***

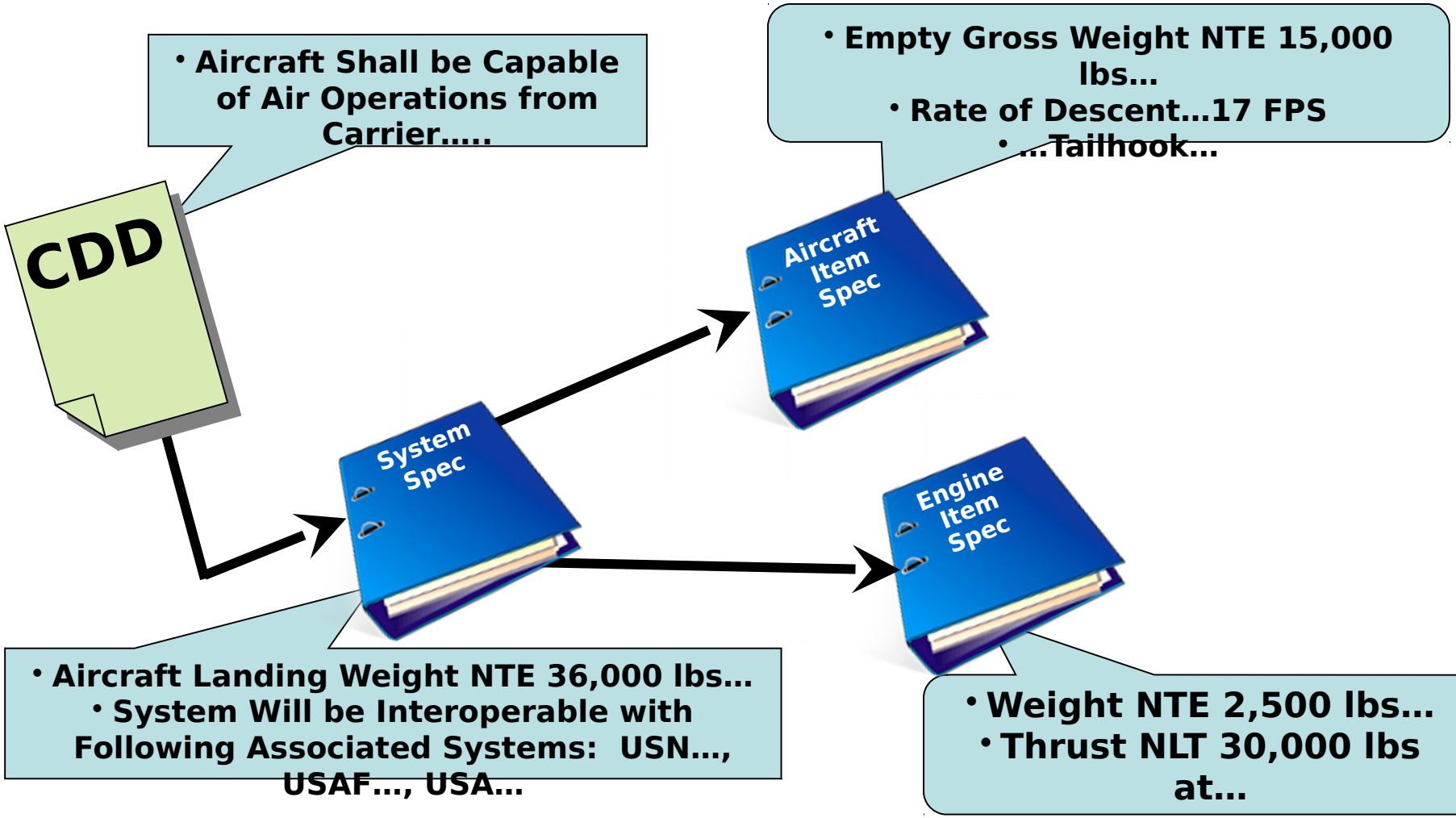
- **System Training KPP** – system training addressed in the AoA and subsequent acquisition phases; training requirements and costs are addressed across the program life cycle
- **Energy Efficiency KPP** – include fuel efficiency considerations for fleet purchases and operational plans consistent with mission accomplishments

# Chemical, Biological, Radiological, & Nuclear (CBRN) KPPs

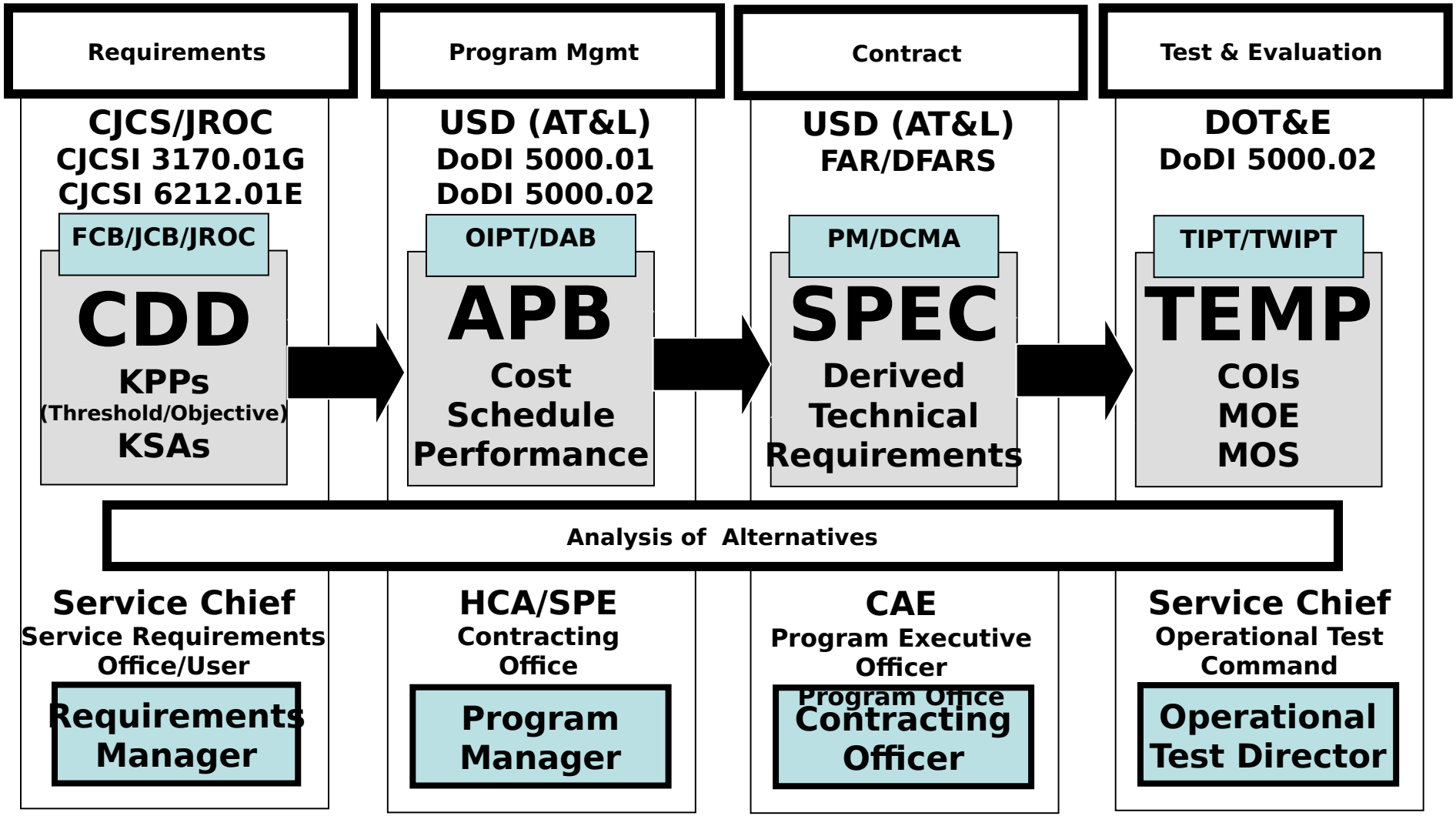
**JCIDS Manual & DoDI 3150.09**

- **Nuclear Survivability KPPs** – Mandatory (including EMP hardening) for systems covered under DoDD S-5210.81, *United States Nuclear Weapons Command, Control, Safety and Security.*
- **CBRN Attributes** – For CBRN mission-critical systems, CBRN survivability performance attribute(s) will be evaluated to determine KPP or KSA designation (may be combined w/survivability, force protection or Net-Ready).

# Requirements Flowdown


• Aircraft Shall be Capable of Air Operations from Carrier……
• Empty Gross Weight NTE 15,000 lbs…
• Rate of Descent…17 FPS
• …Tailhook…
CDD
Aircraft Item Spec
System Spec
Engine Item Spec
• Aircraft Landing Weight NTE 36,000 lbs…
• System Will be Interoperable with Following Associated Systems: USN…, USAF…, USA…
• Weight NTE 2,500 lbs…
• Thrust NLT 30,000 lbs at…

# CDD- APB-SPEC-TEMP




D: Capabilities Development Document
A: Analysis of Alternatives
: Key Performance Parameters*
: Key System Attributes
/JCB: Function /Joint Capability Board

sition Performance E
of Contracting Agen
arching Integrated P
ıse Acquisition Board

SPEC: Specification
CAE: Component Acquisition E
DCMA: Defense Contract Mgm
D/FARS: Defense/Federal Acq I

TEMP: Test & Evaluation Master Pla
COI: Critical Operational Issue
MOE: Measures of Effectiveness
MOS: Measures of Supportab
MOP: Measures of Performanc

# Milestone B

**MDA approves:**

- Program Initiation (for most programs)
- Entry into ***EMD***
- Acquisition Strategy
- Acquisition Program Baseline
- LRIP quantities
- Exit criteria for next phase
- ***Type of Contract***
- ***Milestone B Certification (10 USC 2366b)***
- ADM

**New terms/requirements in *bold blue italics***

# Milestone B: Statutory and Regulatory Requirements

**All programs except where noted (see encl 4, DoDI 5000.02)**

- Acquisition Decision Memorandum (ADM)
- Analysis of Alternatives (AoA) (update)
- Acquisition Strategy
- Affordability Assessment
- Acquisition Program Baseline
- Acquisition Information Assurance Strategy
- ***Alternate Live Fire T&E Plan***
- Benefit Analysis & Determination
- Capability Development Document (CDD)
- Clinger-Cohen Act (CCA) Compliance
- CIO Confirmation of CCA Compliance ***(for MDAPs & MAIS, DoD CIO confirms)***
- Consideration of Technology Issues (ACAT I & II)
- Competition Analysis
- ***Component Cost Estimate (CCE) (MAIS)***
- Cooperative Opportunities
- Core Logistics Analysis/Source of Repair Analysis
- Cost Analysis Requirements Description (CARD) (MDAP & MAIS)
- ***Corrosion Prevention Control Plan***
- ***Data Management Strategy (in acquisition strategy)***
- Economic Analysis (MAIS)
- Exit Criteria
- Initial Capabilities Document (ICD)
- Independent Cost Estimate (ACAT I)
- Independent Technology Readiness Assessment (TRA) (ACAT ID)
- Information Support Plan (ISP)
- Industrial Base Capabilities (MDAP)
- ***Item Unique Identification Impl Plan (SEP annex)***
- Live Fire T&E Waiver
- Life Cycle Sustainment Plan (LCSP)
- ***Life Cycle Signature Support Plan***
- LRIP Quantities (ACAT I & II)
- Manpower Estimate (MDAP)
- Market Research
- ***MDA Program Certification***
- ***MDA Assessment of compliance with Chemical, Biological, Radiological, and Nuclear Survivability Requirements (Not in Encl 4)***
- Net-Centric Data Strategy (in ISP)
- Operational Test Agency OT&E Report
- ***Preliminary Design Review Report***
- ***PM's Developmental Test Report***
- Program Protection Plan (PPP)
- Programmatic Environmental Safety & Occupational Health Evaluation (PESHE)
- ***Replaced System Sustainment Plan (MDAP)***
- Selected Acquisition Report (SAR) (MDAP)
- Spectrum Supportability Determination
- ***Systems Engineering Plan (SEP)***
- ***System Threat Assessment Report (STAR) (ACAT I)***
- System Threat Assessment (ACAT II)

**New terms/requirements in *bold blue italics***

# Implementation of WSARA
## Program Certification for MS B (10 USC 2366b)

MEMORANDUM FOR THE RECORD

SUBJECT: Milestone B Program Certification

As required by Section 2366b of Title 10, United States Code,

(1) I have received a business case analysis for the (*name of program*) and certify on the basis of the analysis that:

(A) the program is affordable when considering the ability of the Department of Defense to accomplish the program's mission using alternative systems;

(B) ***appropriate trade-offs among cost, schedule, and performance objectives have been made to ensure that*** the program is affordable when considering the per unit cost and the total acquisition cost in the context of the total resources available during the period covered by the future-years defense program submitted during the fiscal year in which the certification is made;

(C) reasonable cost and schedule estimates have been developed to execute, ***with the concurrence of the Director of Cost Assessment and Program Evaluation*****,** the product development and production plan under the program;

(D) funding is available to execute the product development and production plan under the program, through the period covered by the future-years defense program submitted during the fiscal year in which the certification is made, consistent with the estimates described in paragraph (C) for the program; and

Changes highlighted in ***bold blue italics***

# Implementation of WSARA
## Program Certification for MS B (10 USC 2366b), continued..

(3) I further certify that:

(A) appropriate market research has been conducted prior to technology development to reduce duplication of existing technology and products;

(B) the Depart of Defense has completed an analysis of alternatives with respect to the program;

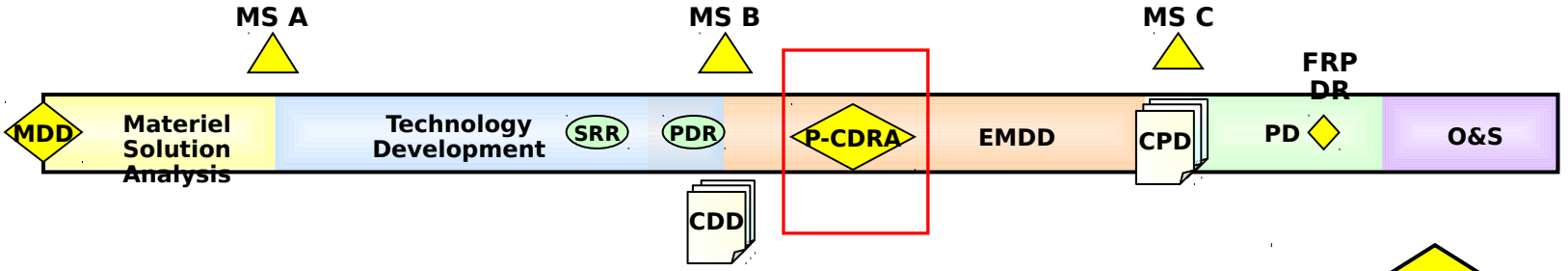
(C) the Joint Requirements Oversight Council has accomplished its duties with respect to the program pursuant to section 181(b) of Title 10, including an analysis of the operational requirements for the program;

(D) the technology in the program has been demonstrated in a relevant environment, ***as determined by the Milestone Decision Authority on the basis of an independent review and assessment by the Director of Defense Research and Engineering; and***

(E) the program complies with all relevant policies, regulations, and directives of the Department of Defense.

Changes highlighted in ***bold blue italics***

# MDA Conducts Post-CDR Assessment




| CHARACTERISTICS | Post-CDR Assessment replaces Design Readiness Review. |
|---|---|
| PROCESS | Post-CDR Assessment is a formal, Milestone Decision Authority (MDA)-conducted decision event. PM describes product baseline, completed build-to packages, a summary of issues and an assessment of program risk based on the CDR report and summarized EVM data. Review considers whether, based on the Program Manager's report, the program is able to provide capability consistent with the Acquisition Program Baseline approved at Milestone B. The MDA determines whether (1) an adjustment should be made, or (2) the program should be permitted to proceed |

**BENEFITS**

- Capitalizes on a well-defined, event-based, technical review
- Decisions based on enhanced knowledge of program and associated contract, all derived requirements surfaced, design uncertainties resolved, development and production costs well defined
- Opportunity for MDA to assess design maturity, e.g., drawings complete
- May provide opportunity to update "current" baseline if consistent with statute ("re-structure")
- An opportunity to defer "derived" requirements if inconsistent with cost / schedule thresholds

**Post-Critical Design Review Assessment**

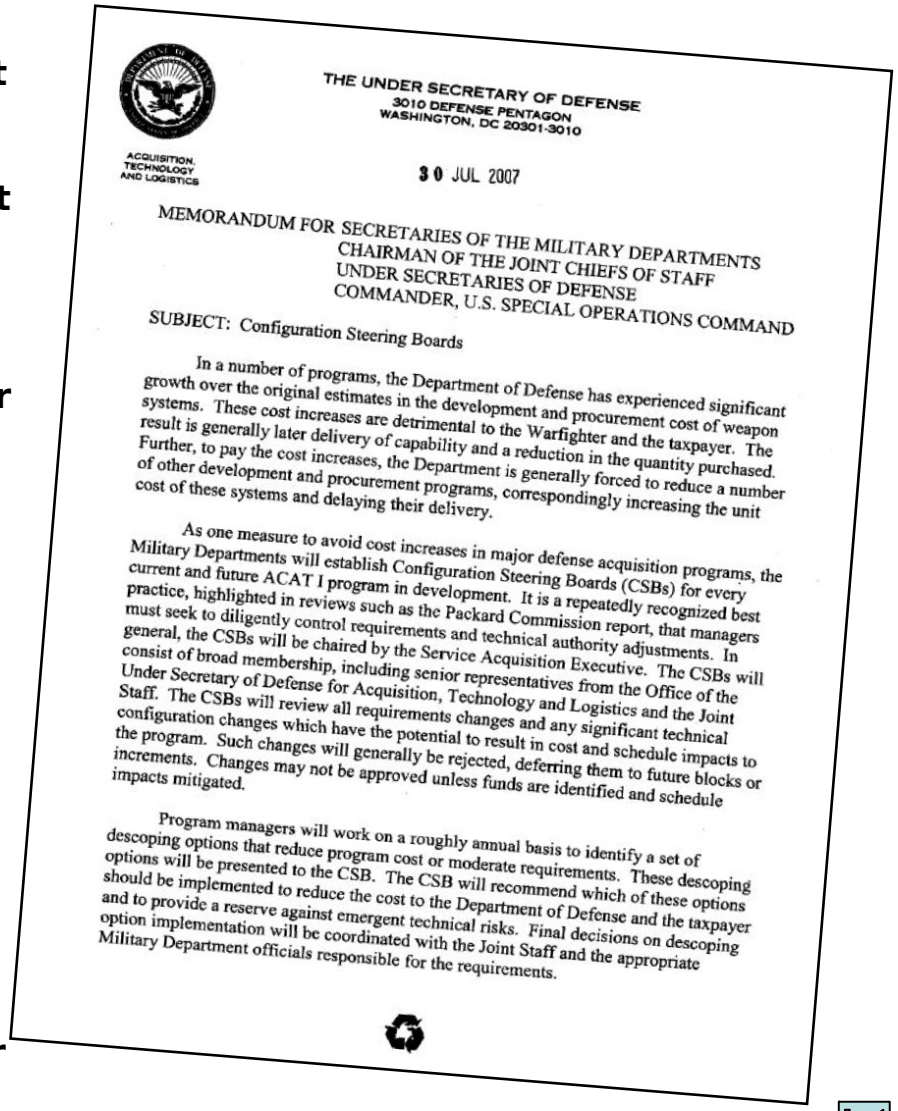
**The MDA shall conduct a formal program assessment following system-level CDR. The system-level CDR, which shall be conducted as soon as practicable after program initiation, provides an opportunity to assess design maturity as evidenced by measures such as: successful completion of subsystem CDRs; the percentage of hardware and software product build-to specifications and drawings completed and under configuration management; planned corrective actions to hardware/software deficiencies; adequate developmental testing; an assessment of environment, safety and occupational health risks; a completed failure modes and effects analysis; the identification of key system characteristics, manufacturing feasibility and critical manufacturing processes; an estimate of system reliability based on**

# Configuration Steering Boards

**Configuration Steering Boards (CSB). The Acquisition Executive of each DoD Component shall establish a CSB with broad executive membership including senior representatives from the Office of the USD(AT&L) and the Joint Staff.**

**•The CSB shall meet at least once annually to review all requirements changes and any significant technical configuration changes for ACAT I and IA programs in development that have the potential to result in cost and schedule impacts to the program. Such changes will generally be rejected, deferring them to future blocks or increments. Changes shall not be approved unless funds are identified and schedule impacts mitigated.**

**•The PM, in consultation with the PEO, shall, on a roughly annual basis, identify and propose a set of descoping options, with supporting rationale addressing operational implications, to the CSB that reduce program cost or moderate requirements. The CSB shall recommend to the MDA (if an ACAT ID or IAM program) which of these options should be implemented. Final decisions on de-scoping option implementation shall be**



THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION, TECHNOLOGY AND LOGISTICS

30 JUL 2007

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
COMMANDER, U.S. SPECIAL OPERATIONS COMMAND

SUBJECT: Configuration Steering Boards

In a number of programs, the Department of Defense has experienced significant growth over the original estimates in the development and procurement cost of weapon systems. These cost increases are detrimental to the Warfighter and the taxpayer. The result is generally later delivery of capability and a reduction in the quantity purchased. Further, to pay the cost increases, the Department is generally forced to reduce a number of other development and procurement programs, correspondingly increasing the unit cost of these systems and delaying their delivery.

As one measure to avoid cost increases in major defense acquisition programs, the Military Departments will establish Configuration Steering Boards (CSBs) for every current and future ACAT I program in development. It is a repeatedly recognized best practice, highlighted in reviews such as the Packard Commission report, that managers must seek to diligently control requirements and technical authority adjustments. In general, the CSBs will be chaired by the Service Acquisition Executive. The CSBs will consist of broad membership, including senior representatives from the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics and the Joint Staff. The CSBs will review all requirements changes and any significant technical configuration changes which have the potential to result in cost and schedule impacts to the program. Such changes will generally be rejected, deferring them to future blocks or increments. Changes may not be approved unless funds are identified and schedule impacts mitigated.

Program managers will work on a roughly annual basis to identify a set of descoping options that reduce program cost or moderate requirements. These descoping options will be presented to the CSB. The CSB will recommend which of these options should be implemented to reduce the cost to the Department of Defense and the taxpayer and to provide a reserve against emergent technical risks. Final decisions on descoping option implementation will be coordinated with the Joint Staff and the appropriate Military Department officials responsible for the requirements.

# DoD Instruction 5000.02 Extract

**Program Support Reviews (PSR). PSRs are a means to inform an MDA and Program Office of the status of technical planning and management processes by identifying cost, schedule, and performance risk and recommendations to mitigate those risks. PSRs shall be conducted by cross-functional and cross-organizational teams appropriate to the program and situation. PSRs for ACAT ID and IAM programs shall be planned by the Director, Systems and Software Engineering to support OIPT program reviews, at other times as directed by the USD(AT&L), and in response to requests from PMs.**

**Independent Management Reviews [Peer Reviews]. Peer Reviews shall be conducted on all Supplies and Services contracts. The reviews shall be advisory in nature and conducted in a manner which preserves the authority, judgment, and discretion of the contracting officer and senior officials of the acquiring organization. Pre-Award reviews shall be conducted on Supplies and Services contracts; Post-Award reviews shall be conducted on Services contracts. The Director, Defense Procurement, Acquisition Policy, and Strategic Sourcing (DPAP), in the Office of the USD(AT&L), shall conduct Peer Reviews for contracts with an estimated value of $1 billion or more (including options). DoD Components shall establish procedures for contracts valued at less than $1 billion.**

# Milestone C

## MDA Approves:

- Updated Acquisition Strategy and Acquisition Program Baseline
- Entry into LRIP for systems that require a LRIP, into production or procurement for systems that do not require LRIP, or into limited deployment for MAIS programs or software intensive systems with no production components
- Exit criteria for LRIP if appropriate
- Acquisition Decision Memorandum

# Milestone C: Statutory and Regulatory Requirements

**All programs except where noted (see encl. 4, DoDI 5000.02)**

- Acquisition Decision Memorandum (ADM)
- Analysis of Alternatives (AoA) (update)
- Acquisition Strategy
- Affordability Assessment
- Acquisition Program Baseline
- Acquisition Information Assurance Strategy
- Benefit Analysis & Determination
- Capability Production Document (CPD)
- Title 40/Clinger-Cohen Act (CCA) Compliance
- CIO Confirmation of CCA Compliance ***(for MDAPs & MAIS, DoD CIO confirms)***
- Consideration of Technology Issues (ACAT I & II)
- Competition Analysis
- ***Component Cost Estimate (CCE)***
- Cooperative Opportunities
- Core Logistics Analysis/Source of Repair Analysis
- Cost Analysis Requirements Description (CARD) (MDAP & MAIS)
- ***Corrosion Prevention Control Plan***
- ***Data Management Strategy (in acquisition strategy)***
- Exit Criteria
- Initial Capabilities Document (ICD) (if program initiation)
- Independent Cost Estimate (ACAT I)
- Independent Technology Readiness Assessment (TRA) (ACAT ID)
- Information Support Plan (ISP)
- Industrial Base Capabilities (MDAP)
- ***Item Unique Identification Plan (SEP annex)***
- Life Cycle Sustainment Plan (LCSP)
- ***Life Cycle Signature Support Plan***
- Manpower Estimate (MDAP)
- MDA Program Certification (if program initiation)
- ***military equipment valuation (in acquisition strategy)***
- Net-Centric Data Strategy (in ISP)
- Operational Test Agency OT&E Report
- ***PM's Developmental Test Report***
- Program Protection Plan (PPP)
- Programmatic Environmental Safety & Occupational Health Evaluation (PESHE)
- Selected Acquisition Report (SAR) MDAP (if rebaselined)
- Spectrum Supportability Determination
- ***Systems Engineering Plan (SEP)***
- ***System Threat Assessment Report (STAR)(ACAT I)***
- System Threat Assessment (ACAT II)
- Technology Readiness Assessment (TRA)
- Test & Evaluation Master Plan (TEMP)

**New terms/requirements in bold blue Italics**

# Full Rate Production Decision Review (FRPDR)

## MDA Approves:

- Full-rate production
- Updated Acquisition Strategy
- Updated Acquisition Program Baseline
- Exit criteria, if appropriate
- Provisions for evaluation for post-deployment performance
- Acquisition Decision Memorandum (ADM)

# FRPDR Statutory and Regulatory Requirements

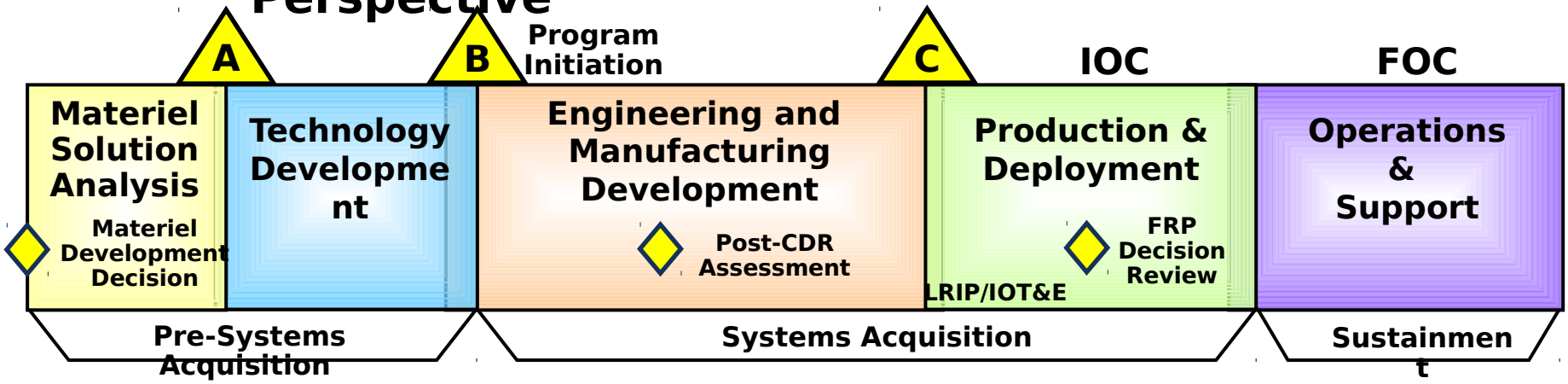
| | |
|---|---|
| •Acquisition Decision Memorandum (ADM)<br>•Analysis of Alternatives (AoA) (AIS only)<br>•Acquisition Strategy<br>•Acquisition Program Baseline<br>•Acquisition Information Assurance Strategy<br>•Beyond LRIP Report (DOT&E T&E Oversight Programs)<br>•Clinger-Cohen Act (CCA) Compliance<br>•Confirmation of CCA Compliance ***(for MDAPs & MAIS, DoD CIO confirms)***<br>•***Component Cost Estimate (CCE)***<br>•Cost Analysis Requirements Description (CARD) (MDAP & MAIS)<br>•***Data Management Strategy (part of Acq Strategy)***<br>•Economic Analysis | •Exit Criteria<br>•IT and NSS Joint Interoperability Test Certification (all IT incl NSS)<br>•IOT&E Completed ACAT I and II (conventional weapons systems for use in combat)<br>•Independent Cost Estimate (ACAT I) (if MDA requests)<br>•***Life Cycle Sustainment Plan (LCSP)***<br>•Live Fire T&E Report (OSD LFT&E Programs)<br>•Manpower Estimate (MDAP)<br>•***Military Equipment Valuation (part of Acq Strategy)***<br>•Operational Test Agency OT&E Report<br>•Post Implementation Review<br>•Programmatic Environmental Safety & Occupational Health Evaluation (PESHE)<br>•Test & Evaluation Master Plan (TEMP) |

For AIS systems, FRPDR is the Full Deployment Decision Review

**New terms/requirements in *bold blue italics***

# Defense Acquisition System Weighted Expenditures

## DoDI 5000.02 Perspective




## Warfighter and Sustainment Organization Perspective

20-35%

30+ YEARS

65-80%

Nominal Life Cycle Cost Distribution

# Level of Milestone Review & Acquisition Category

***Acquisition Category***

***ACAT ID***

$365M RDT&E or
$2.19B Procurement
(FY2000 Constant $)

***ACAT IAM***

$378M Life Cycle Cost or
$126M Total Prog. Cost or
$32M Prog. Cost
in any single year
(FY2000 Constant $)

***ACAT IC/IAC***

***ACAT II***

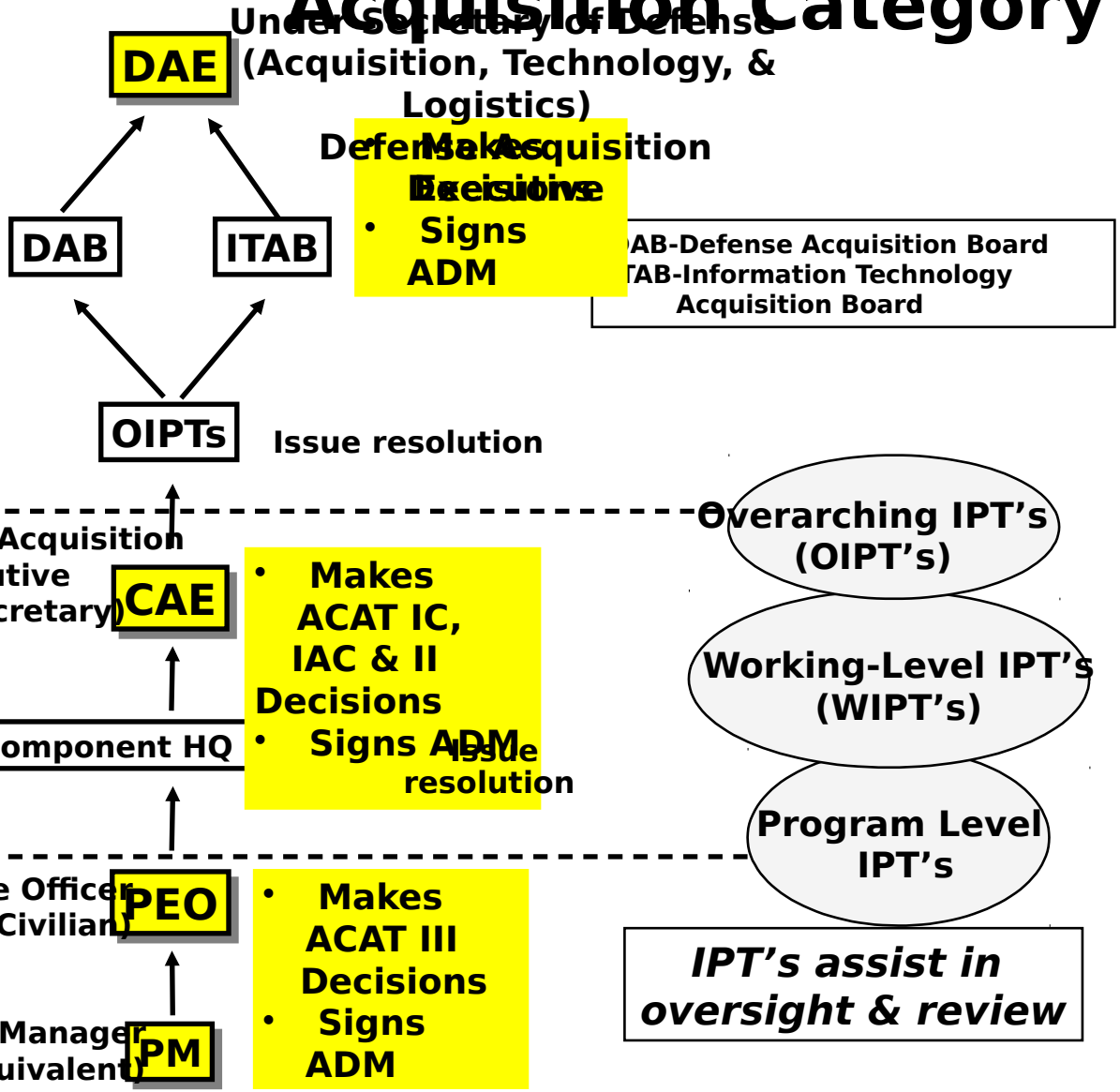
$140M RDT&E or
$660M Procurement
(FY2000 Constant $)

***ACAT III***

No Fiscal Criteria

***ACAT IV***

Navy
USMC




Note: Some PM report directly to CAE.

# Defense Acquisition Board (DAB) Members

Chair - Under Sec of Defense (Acquisition, Technology & Logistics)

- Vice Chairman, Joint Chiefs of Staff
- Under Sec of Defense (Comptroller)
- Assistant Secretary of Defense (NII)
- Director, Operational Test & Evaluation
- Secretary of the Army
- Secretary of the Navy
- Secretary of the Air Force
- Under Sec of Defense (Policy)
- Under Sec of Defense (Personnel & Readiness)



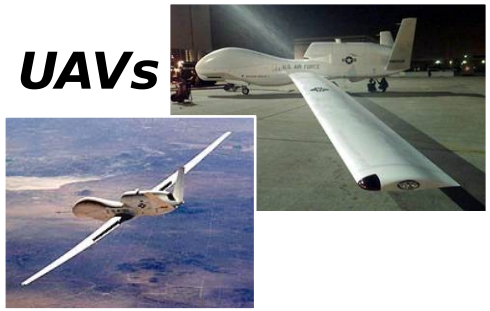
62

# Some Technologies That Changed Warfighting

- Disruptive Technologies Resulting from Technology Push, not Requirements Pull:
  - Internet
  - GPS
  - Night vision
  - Lasers
  - Stealth
  - Predator
  - Global Hawk

**All provided dominant capability**

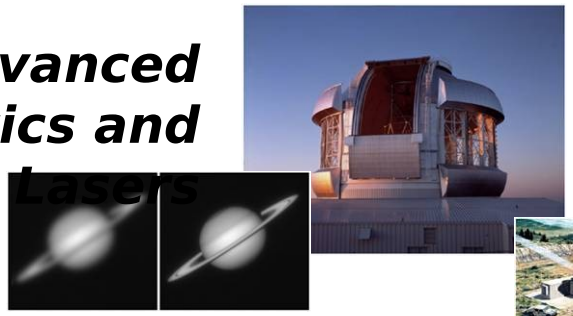
***Stealth***



***UAVs***

***GPS***

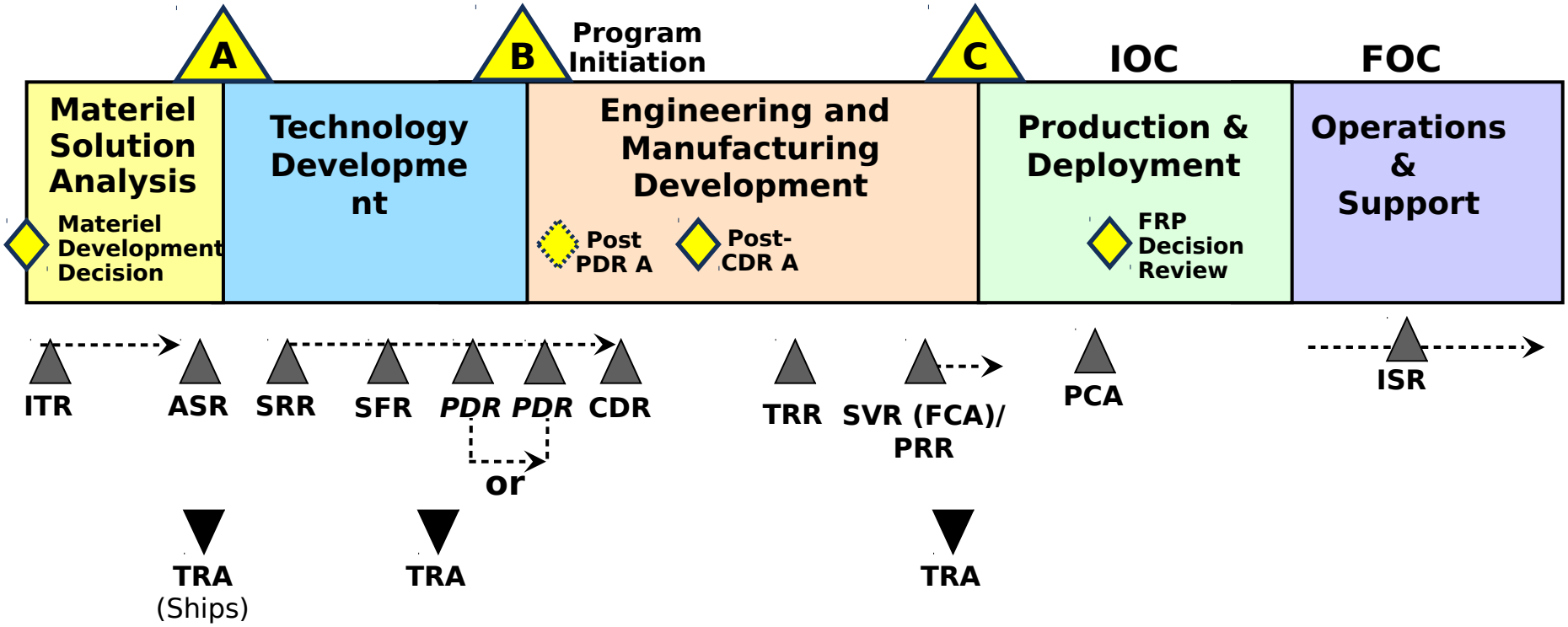
***Night Vision***



***Advanced Optics and Lasers***

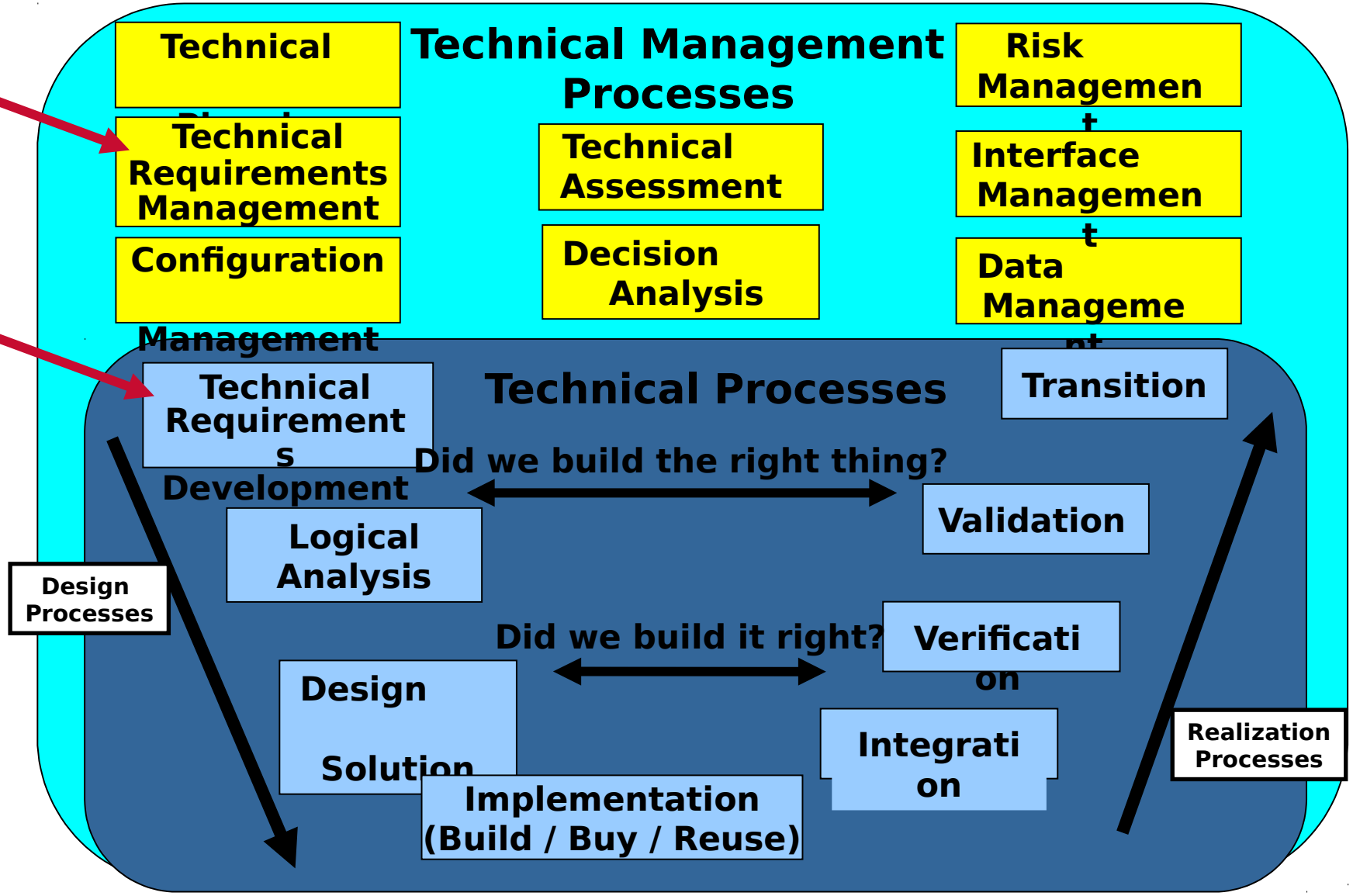
Source: DDR&E

# Systems Engineering Technical Reviews



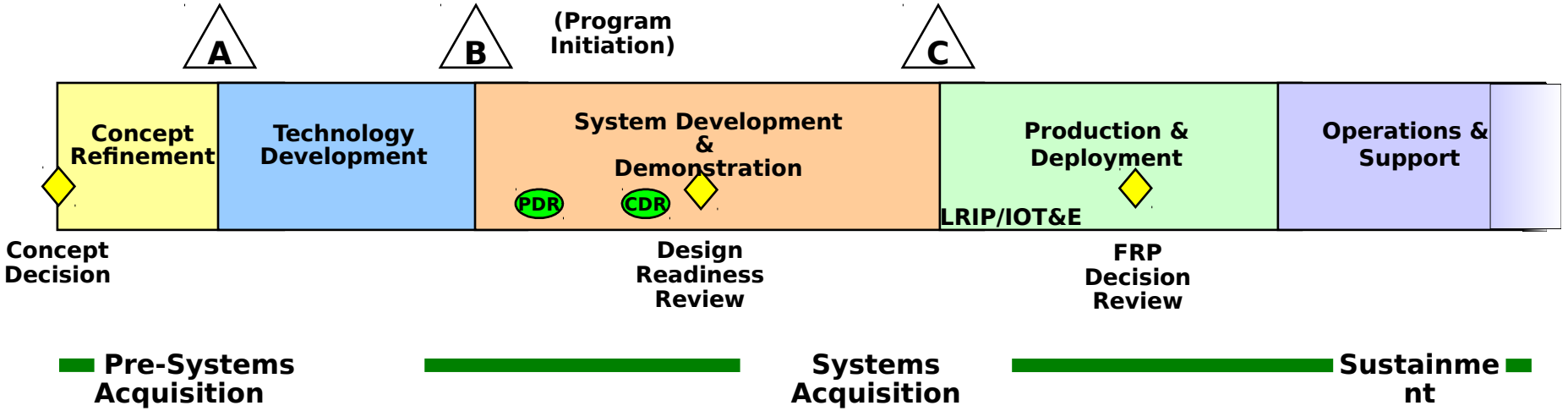

- Initial Technical Review (ITR)
- Alternative Systems Review (ASR)
- Systems Requirements Review (SRR)
- System Functional Review (SFR)
- Preliminary Design Review (PDR)
- Critical Design Review (CDR)
- Post-PDR Assessment (Post-PDRA)
- Post-CDR Assessment (PCDRA)
- Test Readiness Review (TRR)
- System Verification Review (SVR)
- Functional Configuration Audit (FCA)
- Production Readiness Review (PDR)
- Operational Test Readiness Review (OTRR)
- Physical Configuration Audit (PCA)
- Technology Readiness Assessment (TRA)
- In-Service Review (ISR)

# The Systems Engineering Process

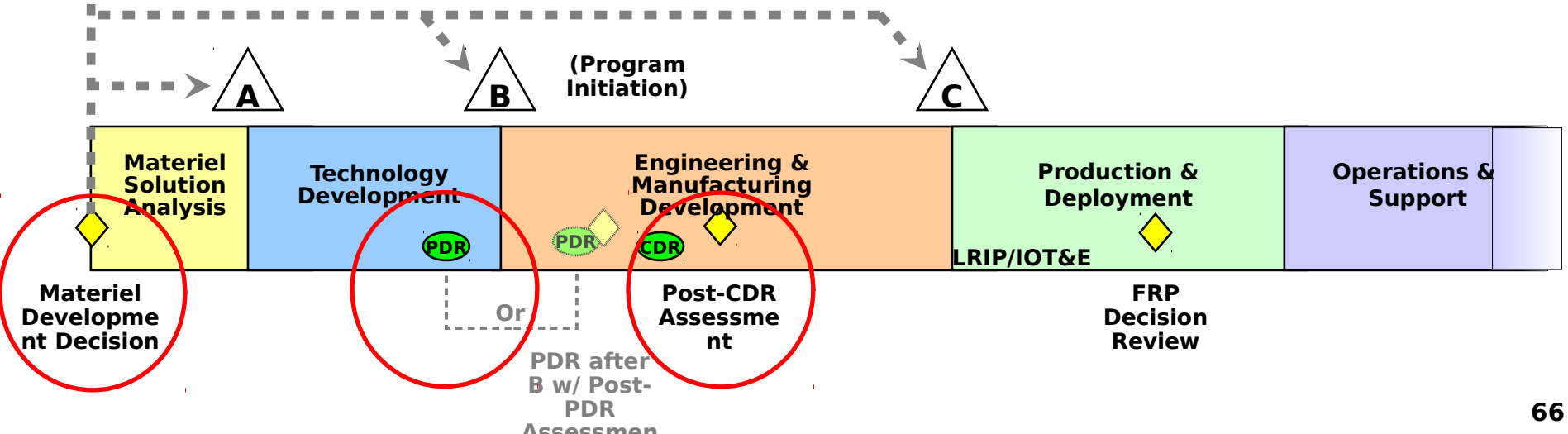


# Comparison to DoDI 5000.2, May 12, 2003

***Defense Acquisition Management System, May 2003 – December 2008***

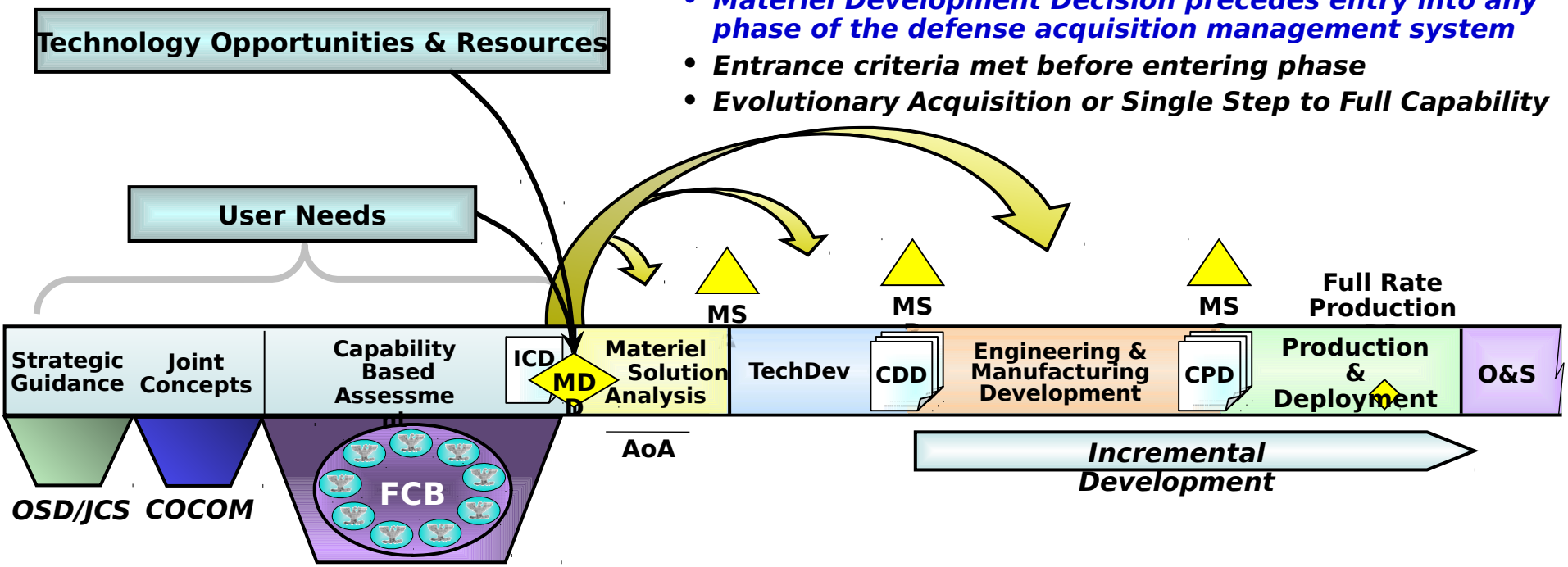



***Defense Acquisition Management System, Revised December 8, 2008***



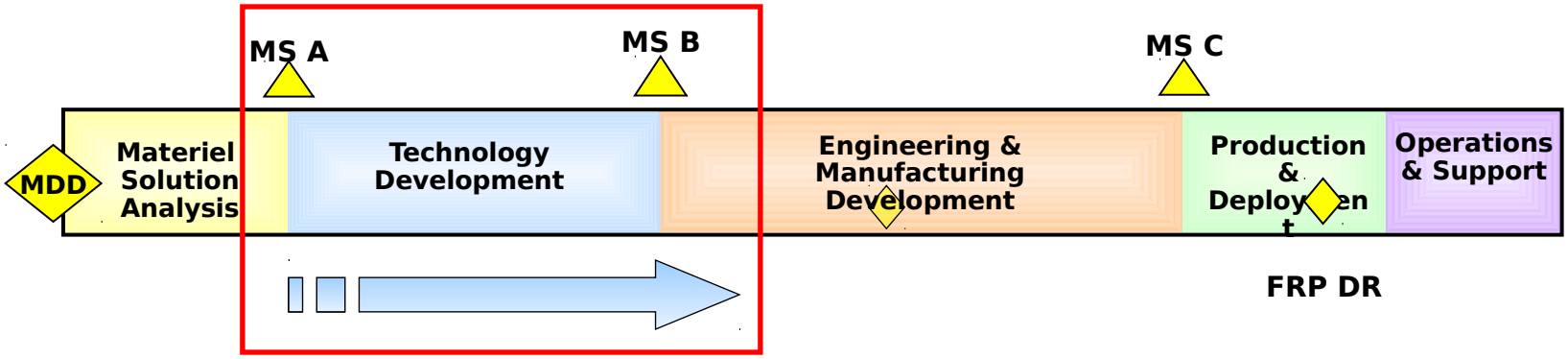
# Mandatory "Materiel Development Decision"

- ***Materiel Development Decision precedes entry into any phase of the defense acquisition management system***
- ***Entrance criteria met before entering phase***
- ***Evolutionary Acquisition or Single Step to Full Capability***



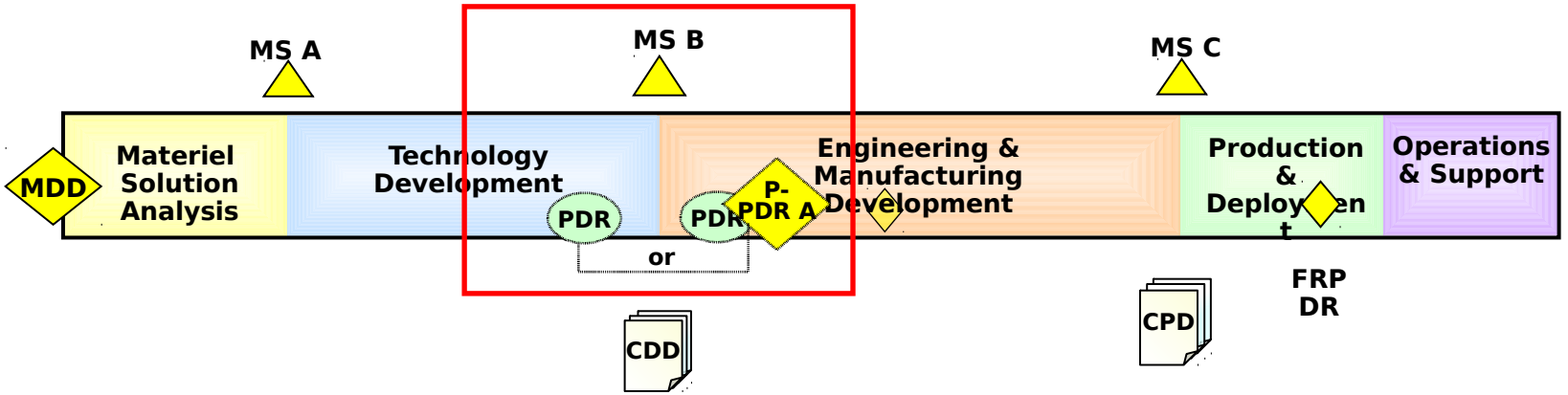

- **JROC recommends that the Milestone Decision Authority (MDA) consider potential materiel solutions**
- **MDA ensures necessary information is available to support the decision**
- **Materiel Solution Analysis Phase begins with the MDD—the formal entry point into the acquisition process, mandatory for all programs**
- **At the MDD, the Joint Staff presents the JROC recommendations; the DoD Component presents the ICD and a preliminary concept of operations, a description of the needed capability and operational risk, and the basis for determining that non-materiel approaches will not sufficiently mitigate the capability gap**
- **D,PA&E (or DoD Component equivalent) proposes Assessment of Alternatives (AoA) study guidance**
- **MDA approves the AoA study guidance; determines the acquisition phase of entry; identifies the initial review milestone; and designates the lead DoD Component(s)**

# Prototyping and Competition




- **The Technology Development Strategy and associated funding shall provide for two or more competing teams producing prototypes of the system and/or key system elements prior to, or through, Milestone B. Prototype systems or appropriate component-level prototyping shall be employed to reduce technical risk, validate designs and cost estimates, evaluate manufacturing processes, and refine requirements. . . .**

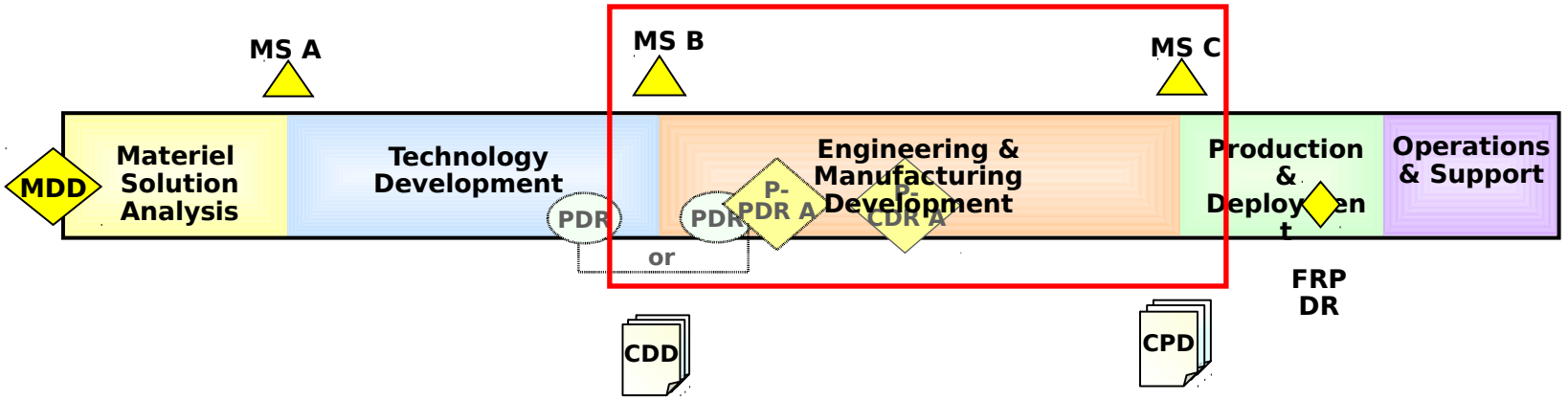
# Preliminary Design Review (PDR)




| *PDR Before Milestone B* | *or* | *PDR after B and Post-PDR Assessment* |
|---|---|---|
| • Consistent with:<br>  • Technology Development Phase objectives<br>  • Associated prototyping activity, and<br>  • The MDA approved TDS<br>• Planning reflected in the TDS<br>  • Establishes the allocated baseline and underlying architectures<br>  • Defines a high-confidence design<br>• Conducted at the system level<br>• Informs requirements trades; improves cost estimation; and identifies remaining design, | | *If a PDR has not been conducted prior to Milestone B:*<br>• Plan for a PDR as soon as feasible after program initiation<br>• PDR report to the MDA prior to the Post-PDR Assessment<br>  • Report reflects requirements trades based upon the PM's assessment of cost, schedule, and performance risk |

***2009 WSARA requires before Milestone***

# Re-titled and Refocused Engineering and Manufacturing Development Phase




**. . . develop a system or an increment of capability; complete full system integration; develop an affordable and executable manufacturing process; ensure operational supportability; implement human systems integration; design for producibility; ensure affordability; protect Critical Program Information; and demonstrate system integration, interoperability, safety, and utility.**

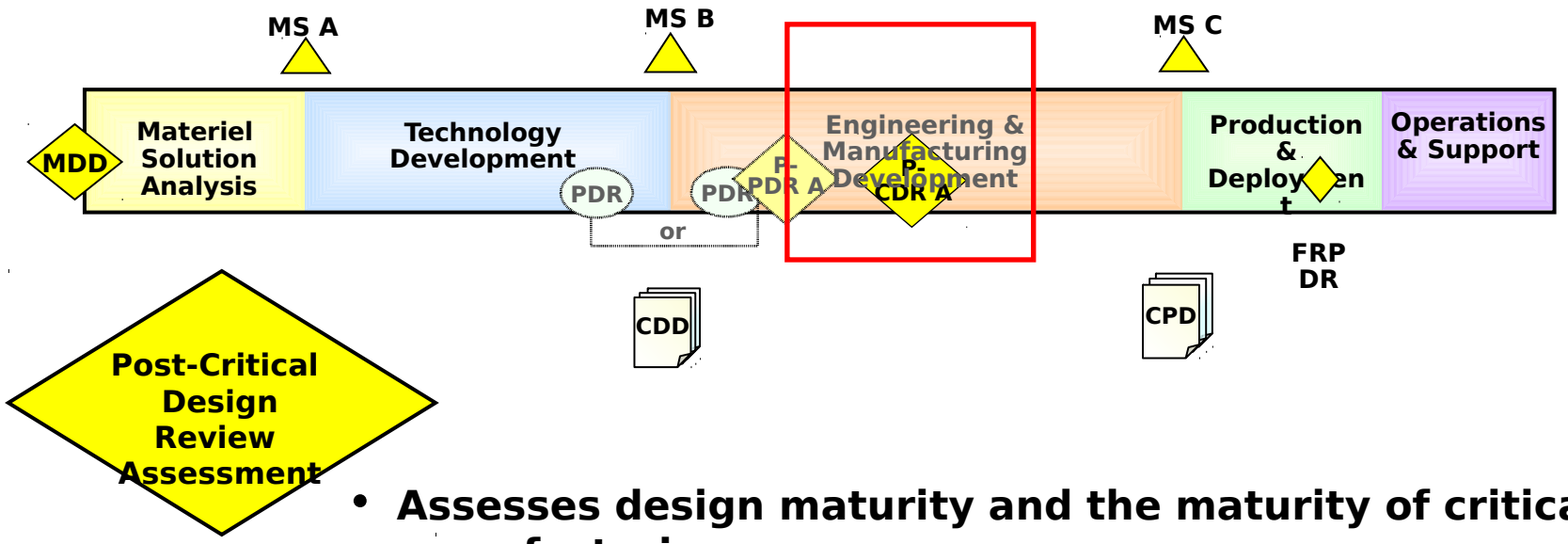
**Integrated System Design**

- **Define system and system-of-systems functionality and interfaces**
- **Complete hardware and software detailed design and reduce system-level risk**
- **Establish product baseline for all configuration items**

**System Capability and Manufacturing Process Demonstration**

**Demonstrate the ability to operate in a useful way consistent with the approved key performance parameters and that system production can be supported by demonstrated manufacturing processes**

# MDA Conducts Post-CDR Assessment

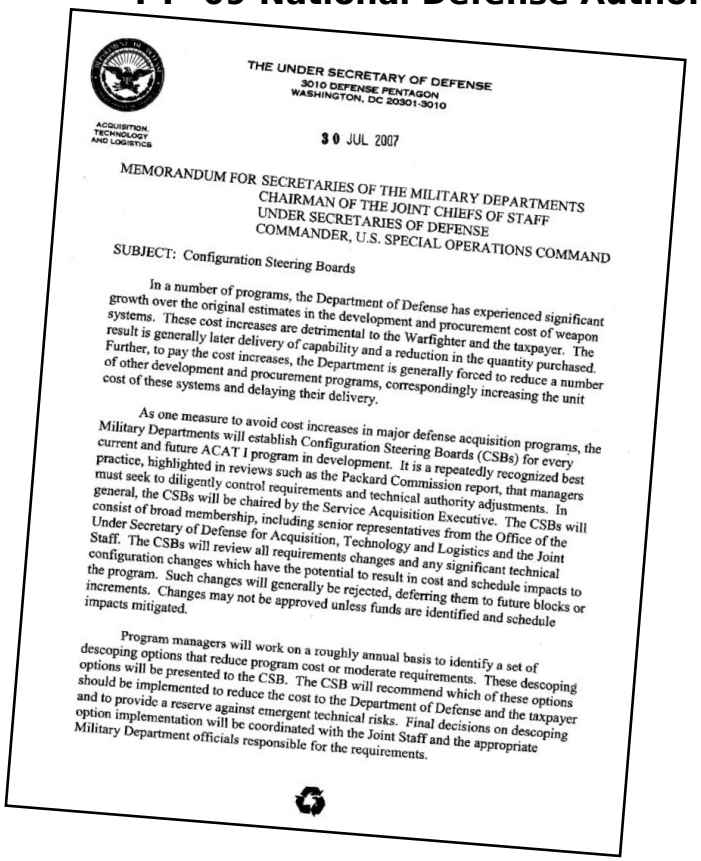



- **Assesses design maturity and the maturity of critical manufacturing processes**
- **Considers whether the program provides capability consistent with the Acquisition Program Baseline (APB) approved at Milestone B**
- **MDA determines whether**
  **(1) an adjustment should be made, or**
  **(2) the program should be permitted to proceed without change**
- **Results documented in an ADM**

# Configuration Steering Boards (CSBs)

***The Acquisition Executive of each DoD Component shall establish and chair a CSB with broad executive membership . . .***

**DoDI 5000.02 per Section 814, FY '09 National Defense Authorization Act**



THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION, TECHNOLOGY AND LOGISTICS

30 JUL 2007

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
COMMANDER, U.S. SPECIAL OPERATIONS COMMAND

SUBJECT: Configuration Steering Boards

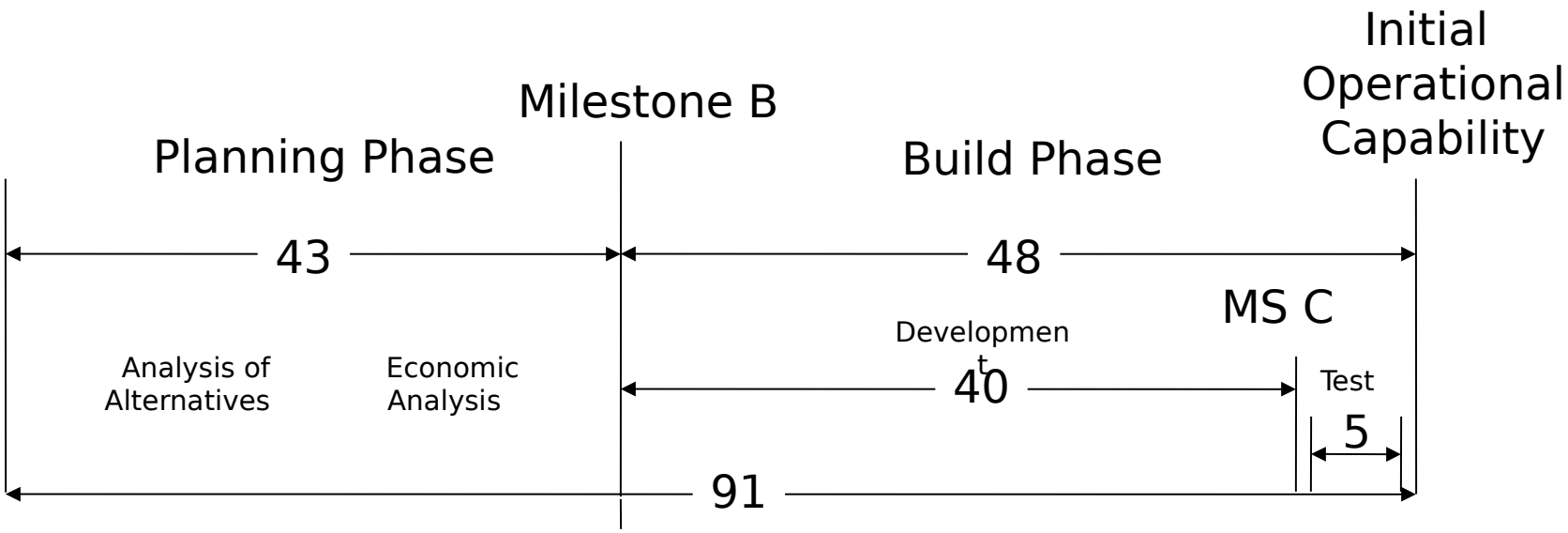
In a number of programs, the Department of Defense has experienced significant growth over the original estimates in the development and procurement cost of weapon systems. These cost increases are detrimental to the Warfighter and the taxpayer. The result is generally later delivery of capability and a reduction in the quantity purchased. Further, to pay the cost increases, the Department is generally forced to reduce a number of other development and procurement programs, correspondingly increasing the unit cost of these systems and delaying their delivery.

As one measure to avoid cost increases in major defense acquisition programs, the Military Departments will establish Configuration Steering Boards (CSBs) for every current and future ACAT I program in development. It is a repeatedly recognized best practice, highlighted in reviews such as the Packard Commission report, that managers must seek to diligently control requirements and technical authority adjustments. In general, the CSBs will be chaired by the Service Acquisition Executive. The CSBs will consist of broad membership, including senior representatives from the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics and the Joint Staff. The CSBs will review all requirements changes and any significant technical configuration changes which have the potential to result in cost and schedule impacts to the program. Such changes will generally be rejected, deferring them to future blocks or increments. Changes may not be approved unless funds are identified and schedule impacts mitigated.

Program managers will work on a roughly annual basis to identify a set of descoping options that reduce program cost or moderate requirements. These descoping options will be presented to the CSB. The CSB will recommend which of these options should be implemented to reduce the cost to the Department of Defense and the taxpayer and to provide a reserve against emergent technical risks. Final decisions on descoping option implementation will be coordinated with the Joint Staff and the appropriate Military Department officials responsible for the requirements.

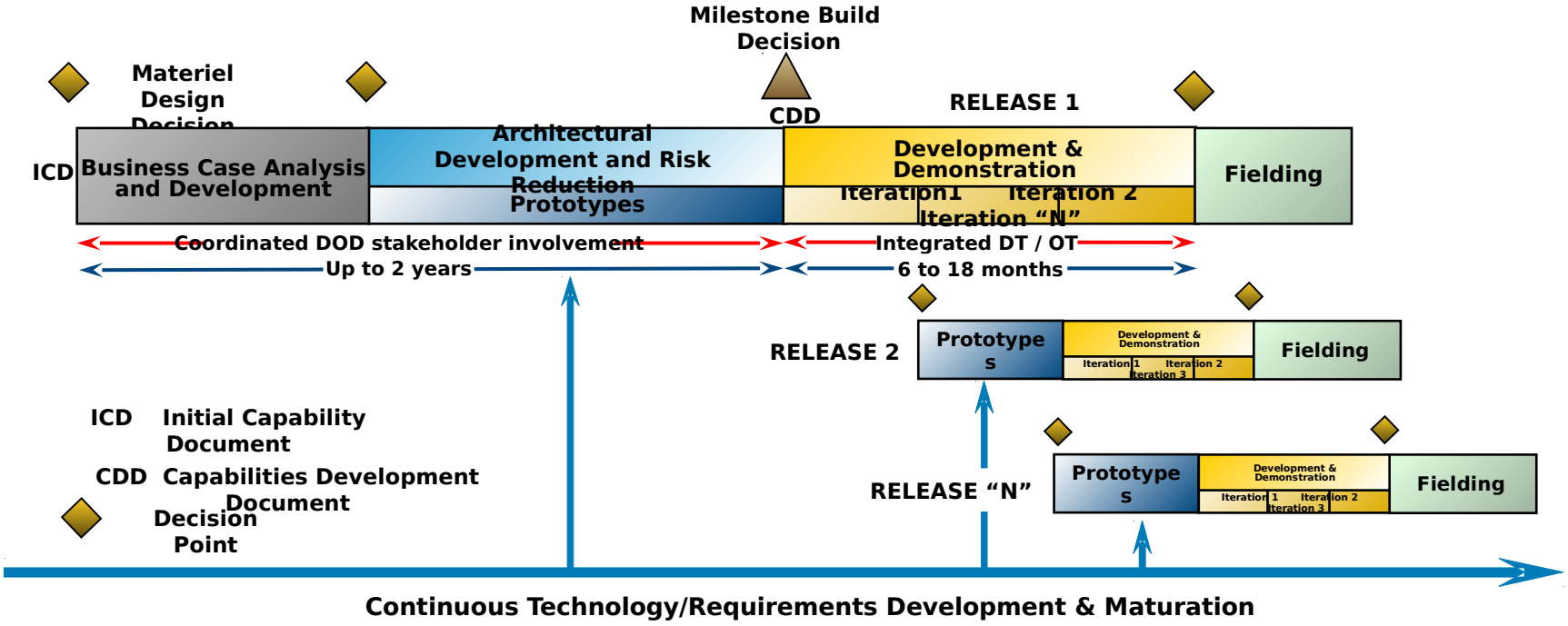
- **CSBs meet at least annually**
  - **Reviews all requirements changes and significant technical configuration changes**
  - **Changes generally rejected, deferred to future blocks or increments**
  - **If approved, changes require identified funding and mitigated schedule impacts**
- **The Program Manager (PM) (with the Program Executive Officer) identifies descoping options to reduce program cost or moderate requirements**
- **The CSB recommends which options should be implemented**
- **Final decisions coordinated with the Joint Staff and military**

# DoD IT Acquisition Cycle-Time - 32 MAIS




*Cycle-Time Driven by Processes Developed to Counter*
*a Cold War Adversary In Industrial Age Society*

# DSB IT Acquisition Model




**ICD established by streamlined JCIDS process**
**CDD and acquisition baseline for "N" releases established at milestone build decision**
**All releases fully funded at milestone build decision**
**Release "N+1" restarts entire process**

*Adapts an evolutionary approach to IT Acquisition*


74